

CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
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"REGIONAL STRUCTURE OF MEWAR".

A dissertation submitted in partial
fulfilment for the degree of
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in
Regional Development

Supervisor
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by
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CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI

I certify that the dissertation entitled "Regional Structure of Mewar" submitted by Shri R.K. Dhabai in fulfilment of six credits out of the total requirements of twenty four credits for the degree of Master of Philosophy (M.Phil) of the university, is his original work, to the best of my knowledge, and may be placed before the examiners for evaluation.

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Moushree
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P R E F A C E

The dissertation entitle "Regional Structure of Mewar" is an attempt to analyse the structural backwardness of Mewar. The Mewar has been conceived as a homogeneous region characterised by the physico-socio-economic entity and a structurally backward area. This exploratory study of its structural backwardness has not only unfolded the reasons for its backwardness but also has highlighted the role of interacting regional elements which themselves pose as development constraints.

This regional analysis of Mewar has clearly shown the persistence of stagnant economy during the development plan period. During the decade 1961-71 there has not been any significant change in levels of development in the component regional units. According to Asok Mitra's classification of Indian districts into four levels of development in 1961 out of 5 constituent districts of Mewar, Udaipur, Chittorgarh and Dungarpur belong to lowest but one and the rest two to lowest level while according to M.N. Pal's more regorous classification of Indian districts into 6 levels all the 5 constituent districts of Mewar have been classified in lowest but one level characterising a uniform backward region. K.L. Sharma in his M.Phil dissertation conclusively demonstrated that the Mewar has not progressed in developmental level during 1961-71 and infact shows continuation of its backwardness. Therefore it is pertinent to analyse Mewar's Regional Structure with an objective to find out certain strategies for removing its structural backwardness and ultimately to prepare a regional development programme for it. The present study is just an exerise prelude to such an ultimate objective.

CHAPTER I

MEWAR AS A REGIONIntroduction :

The Southern Rajasthan comprising the districts of Bhilwara, Udaipur, Banswara, Dungarpur and Chittorgarh is popularly known as "Mewar". The region of Mewar is basically a historic one. The identity of this region could be traced back in its eventful politico-administrative history. Broadly speaking, the Mewar region is conterminous with the present Udaipur division but also represents the Mewar Residency under British inclusive of Princely states like Shahpura, Partapgarh, Dungarpur, Banswara and Kushalgarh as these adjoining states were some times under the administrative control of the Mewar Residency and some time were separated from it. Thus as a whole the present Southern Rajasthan is the union of those once fragmented princely states and has assumed a territory of Mewar. The Mewar, a historic name still bears the testimony of the eventful and glorious past.

The region lies latitudinally between $23^{\circ}3'10''$ to $26^{\circ}1'5''$ north and longitudinally between $73^{\circ}1'10''$ to $75^{\circ}48'30''$ east, having a population of 4,988,395 (1971) i.e. 19.36 per cent of the Rajasthan state and 0.91 per cent of the India's population over an area of about $47,382 \text{ Km}^2$, i.e. 13.84 per cent of the state and 1.44 per cent of the nation covering 47 tehsils (Table 1.1)

The over all population density (1971) in Mewar was 105 persons per sq. kilometre in comparison with Rajasthan state's and that of India's 167 persons. Thus, the density in the region is normally 40 per cent higher than the state average but 60 per cent lower than the national average.

The literacy level in Mewar is 15.95 per cent as compared to state's and the national level of 19.07 and 29.34 per cent respectively. The general, rural and urban sex ratios of the region are 950, 958 and 882, where as in the state and in nation they are 911, 919, 875 and 929, 948 and 958 respectively.

(Table 1.2).

The human settlements are generally small and evenly distributed in the region. The number of rural and urban settlements are 9011 and 21 only, having about 89.96 and 10.04 per cent population respectively. The spatial distribution of scheduled caste and tribal population presents significant negative correlation. About 9.65 per cent of the people belong to scheduled caste and 34.19 per cent scheduled tribes in comparison with 15.82 and 12.13 for the nation respectively. So the region has a sizeable population belonging to scheduled tribes who have been historically occupying the cumene.

The above facts together have given an identity of Mewar as a region and characterised the general backwardness in its tradition bound regional structure.

Table 1.1
Administrative Units of Mewar
1971

S.No.	Districts	Tehsils	Area (in km ²)
1.	Bhilwara 11	Bhilwara, Shahpura, Hurda, Jahazpur, Mandal, Banera, Raipur, Sahara, Kotri, Mandalgarh and Asing.	10450.0
2.	Udaipur 17	Bhim, Deogarh, Amet, Kumbhalgarh, Rajsamand, Railmagra, Nathdwara, Mavali, Gogunda, Vallabhnagar, Girwa, Kotra, Phalasia, Lasadia, Sarada, Salumber, and Kherwara.	17267.0
3.	Chittorgarh 11	Rasmi, Gangrar, Begun, Chittorgarh, Kapasan, Bhadesar, Nimbahera, Choti Sadri, Bari Sadri, Dungla and Partapgarh.	10858.0
4.	Dungarpur 3	Dungarpur, Aspur, Sagwara	3770.0
5.	Banswara 5	Ghatol, Garhi, Banswara, Bagidora and Kushalgarh	5037.0
Mewar 5 Districts 47 Tehsils			47382.0

Mewar Administrative Units

Ajmer distt.

R.F. I:714285

KMS 20 15 10 5 0 10 20 30 40 KMS
MILES 10 8 6 4 2 0 10 20 30 MILES

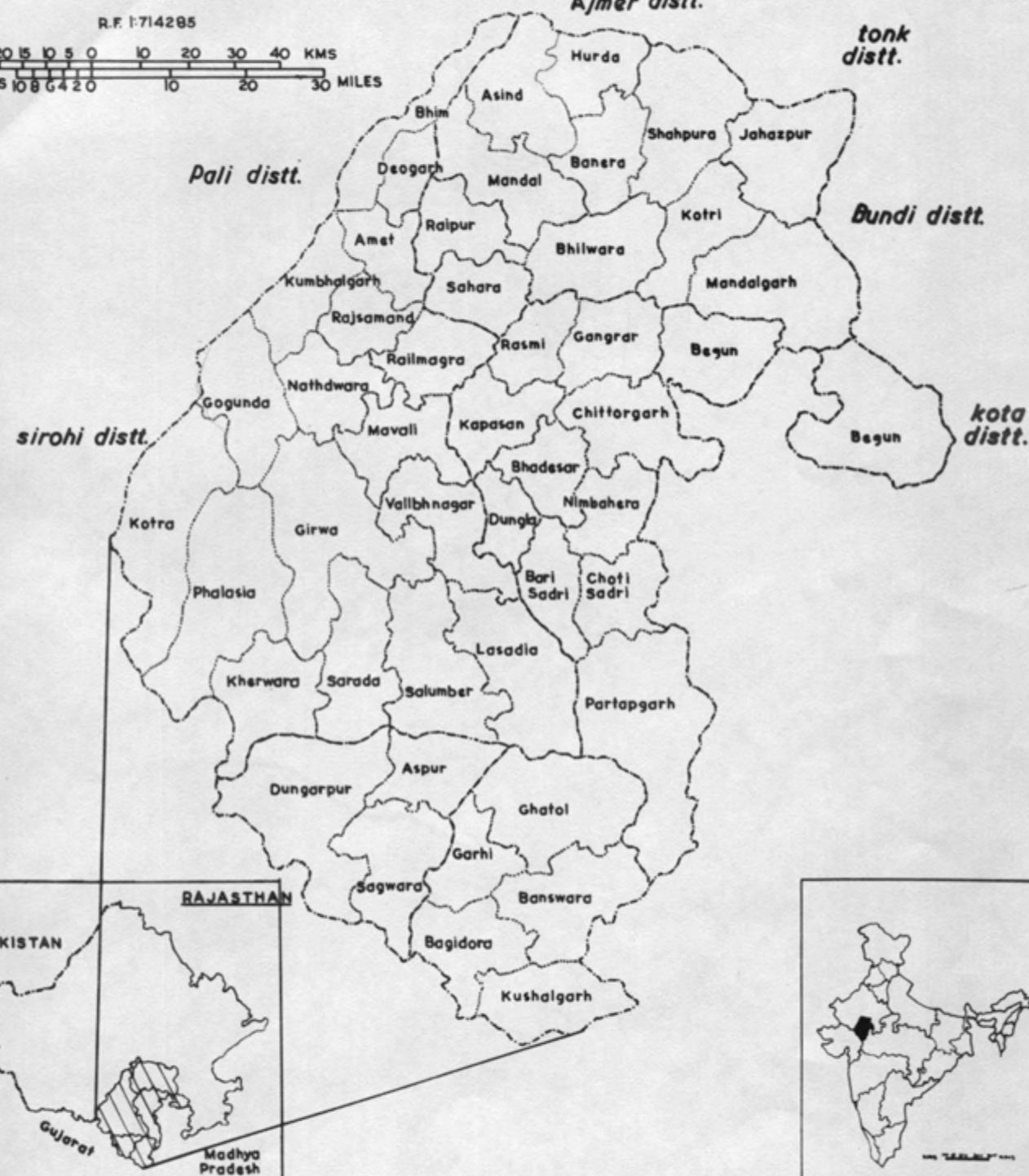


FIG. I'

Table 1.2
Basic Facts of Mewar, Rajasthan and India

S.No.	Title	Mewar	Rajasthan	India	<u>Mewar in Context with Rajasthan</u>	<u>India</u>
1.	Total Population	4988395.0	25765806.0	547949809.0	19.26	0.91
2.	Rural Population	4487855.0 (89.96)	21222046.0 (82.37)	438855500.0 (80.09)	21.14	1.02
3.	Urban Population	500540.0 (10.04)	4543761.0 (17.63)	109094309.0 (19.91)	11.01	0.45
4.	Total Area	47382.0	342214.0	3276141.0	13.84	1.44
5.	Rural Area	46889.1 (98.95)	338421.7 (98.89)	--	13.85	-
6.	Urban Area	492.9 (1.09)	3792.3 (1.10)	--	12.99	-
7.	General Density	105.08	. 75	167.2	-	-
8.	Rural Density	95.71	63	--	-	-
9.	Urban Density	1015.50	1198	--	-	-
10.	Total Scheduled Caste	481805.0 (9.65)	4075580.0 (15.82)	79995896.0 (14.5)	11.82	0.60
11.	Rural Scheduled Caste	434794.0 (9.69)	3493437.0 (16.46)	70441388.0 (16.0)	12.44	0.61
12.	Urban Scheduled Caste	47012.0 (9.39)	-- (12.81)	9554508 (8.7)	-	0.49

contd.....

contd.. Table 1.2.

13.	Total Scheduled Tribes	1705689.0 (34.19)	3125506.0 (12.13)	38015162.0 (6.9)	54.57	4.48
14.	Rural Scheduled Tribes	1687812.0 (37.60)	3057790.0 (14.41)	36720681.0 (8.3)	55.19	4.59
15.	Urban Scheduled Tribes	17877.0 (3.57)	67716.0 (1.49)	1294481 .0 (1.10)	26.39	1.38
16.	Sex Ratio	950.25	971.0	929.0	-	-
17.	Rural Sex Ratio	958.14	919.0	948.5	-	-
18.	Urban Sex Ratio	882.13	875.0	857.9	-	-
19.	Dependency	1.95	2.2	2.0	-	-
20.	Rural Depedency	1.80	2.08			
21.	Urban Dependency	2.61	2.86			
22.	Total Workers	1687761.0 (33.83)	8048859.0 (\$31.24)	180373399.0 (32.91)	20.96	0.93
23.	Non-Workers	3300634.0	17716947.0	367576410.0	18.62	0.89
24.	Rural Workers	1549194.0 (34.51)	6874604.0 (32.39)			
25.	Non-Workers	3938661.0 (65.49)	14347441.0 (32.39)			
26.	Urban Workers	138567.0 (27.68)	1174255.0 (25.84)			

contd.....

contd.. Table 1.2

27.	Non-Workers	361973.0 (72.32)	3369506.0 (74.16)	
28.	Literacy	15.95	18.07	29.34
29.	Rural Literacy	12.42	15.85	23.60
30.	Urban Literacy	47.65	43.47	52.48
31.	Rural Settlements	9011.0	33305.0	
32.	Urban Settlements	21.0	157.0	
33.	Spacing among Rural Sett.	2.58		
34.	Average Size of Villages	498.04	637.20	
35.	Density of Rural Sett. per 100 km ²	19.01	9.0	
36.	Size of Households	5.13	5.72	

Choice of the Region and Problems :

The Mewar Residency under the British Raj in India was observed in the Independent India, in 1948, and was dissolved into five districts namely Bhilwara, Udaipur, Chittorgarh, Dungarpur and Banswara. The district boundaries were drawn close to the boundary of the then princely states, many small states of which were incorporated in the districts as tehsils. The Mewar region which has been identified for the present study coincides with the regional boundary of the Mewar Residency. The region has been chosen for a detailed regional analysis and for evaluation of its resources and to identify the aspects of regional development which require further probing at greater depth. Surprisingly the region did not change its position in its developmental level in the state of Rajasthan, during the last decade. As a matter of fact the relative position of the region in the state shows a tendency of sliding back in developmental level during 1961-71. The general backwardness of the region is not a recent phenomenon. It was quite backward during the British Raj and astonishingly the region did not show any striking change in response to regional developmental processes during the development plan period when the whole nation is heading toward over all economic development. There has been some improvement in manufacturing in Udaipur and Bhilwara districts only and in transport and communication in those districts where they are already developed. While the backward areas failed to attract any investment what-so-ever, the region could not come to the for-so as to attract the attention of the development planners.

Objectives of the Study :

The main objective of this study is to analyze the several aspects of its physical, social and economic environment, so as to identify the basic problems of development, some principal areas for detailed investigation and to suggest some remedies to remove its backwardness through planned development. So, the work is an exploratory attempt to unfold the entire secrecy of backwardness of Mewar, with respect to its history, physio-gonomic structure and socio-economic environment.

Scope of the Study :

The Mewar region as stated before consists of five districts of unequal size both in area and population and can not be studied meaningfully with district level data, so it has been decided to study with tehsil level data as the tehsil is the smallest administrative unit of which relevant data are available. Except that of manufacturing industries which are available only for the districts, most of the data are compiled at tehsil level.

Data Base :

So far as data base is concerned only secondary sources published in respective district census hand books of 1971 and statistical out-lines have been consulted. The data for industries have been collected from the Directorate of Small Scale Industries. Other unpublished research material and theses have also been consulted.

Methods and Techniques of Analysis :

The various statistical techniques have been widely used for the purpose. First of all we used interpolation method to show the spatial distribution of rainfall. The morphometric analysis of the streams has been done after Strahler's method for drainage study. Spatial concentration of socio-economic phenomena has been studied by location quotient technique while spatial association of them has been done by Spearman's rank correlation and product moment coefficient of correlation between two phenomena. To measure the tendency of the spacial distribution of rural and urban settlements, "Near Neighbour Distance" technique has been used; besides, to measure the relative position of rural settlements, size and spacing analysis has been done; in case of urban settlement rank-size rule has been applied so as to ascertain their spatial and hierarchical distribution. To measure the economic base of the urban settlements, a quantitative functional analysis has been made and the towns have been classified functionally. In case of transport net work analysis, the net work development indicies and circuit number has been found at with the help of matrix prepared by all India railway time-table. Besides above statistical tools, cartographic tools like isopleths, choropeth and scattered diograms have been used intensively for visual expression of the phenomena and analysis has also been made by the map. Categorisation for isopleth and choropleth mapping has been made by keeping consistency from one map to another so as to make them comparable.

Chapterisation :

The dissertation has been divided into seven chapters. The first chapter deals with the introductory statements about the region with the scope and main objectives of the study considering present problems of the region. The second chapter deals with the historical evolution of the region from ancient, medieval to British period. In this chapter more emphasis has been given to the medieval period due to the availability of recorded material.

In chapter third we have analysed the physical base of the region under the sub-headings like physiography, drainage, climatic conditions, soils and natural vegetation.

The chapter four deals with the analysis of social base particularly demographic and social structure of the region. The demographic characteristics of the region, with special reference to concentration of scheduled caste and scheduled tribes have been given special emphasis.

Agriculture being the core of its economy, the chapter fifth deals with its agrarian economy at much detail. As the industries are lacking in this region and no meaningful analysis is possible at micro-level no industrial analysis has been attempted. However, a table showing broad industrial picture of the region is given in appendix II as a reference. In chapter sixth we have analysed the settlement structure of the region where rural and urban settlements have been separately dealt with. In rural and urban settlement structure we tried

to analyse the growth, spatial distribution and economic base of those settlements.

Finally we have put our findings in the last chapter. The regionalisation has been attempted in each chapter but here we have given a synthesized picture of the region and tried and to pin point certain problems and problem areas. A line of further research has also been indicated.

**

CHAPTER II

THE REGION IN ITS HISTORICAL PERSPECTIVEIntroduction :

A region takes its own shape through history and adjusts itself in response to the endogenous and exogenous events. The region of Mewar has witnessed the eventful political history of India at large and that of itself in particular since the early days but more specifically the socio-political events during the Mughal period in India. The basic problem of Mewar's history is its changing boundary or the command area under different political set-up and it involves the identification of those ancient places which still bear the testimony of the past. The real recorded history of the region starts from the period of Mughal in Delhi and Rana's in Mewar. By and large civil administration was more important in the region than socio-economic development throughout the history as has been described in this comparably terraincognita.

In this chapter, we have tried to unfold the politico-economic history of the region in the context of its location on the trade routes of the past. This study has been divided into three parts - first the ancient period, then the medieval period and lastly the pre-Independence period. In each period of history, the region had experienced a pattern of growth to be drastically modified in the successive stage. The name and fame of the region had always been related with such growth

grothe pattern like the scenes of a drama although many events had been autochthonous and left memorable imprints in its social and physical scene.

HISTORICAL BACKGROUND

I. Ancient Period:

Historically Mewar¹ is one of the oldest region in India. Originally perhaps it was a small area around Nagda² (Not far from the city of Udaipur where Guhils originally began to rule) but the region had been occupied by early settlers since long ago*.

In 326 B.C. When Alexander invaded India. The Sibies who were the original inhabitants of Punjab had migrated towards Rajasthan and settled around Madhyamika (Modern Nagri) near Chittorgarh, an ancient city known to Patanjali's Mohabhasya. Thus the territory adjoining Chittorgarh was termed as Sibijanapada. Incidentally Madhyamika is referred also in Mahabharata in connection with the conquest of the vatadhanas by Nakula. It is evident that Madhyamika, the capital of Sibies in the C.2nd B.C. retained its importance also in the succeeding centuries.³

1. Another name of Udaipur region (state) which was one among the eight political charges into which Rajputana was divided. (Sahai - Jawala (1905) "Introduction to Rajputana" pp.108-9.)
2. Sirkar, D.C. (1965). "The Guhilst of Kiskindha" Calcutta; Sanskrit College. pp.38.
- * To throw some light on its earliest situation several attempts have been made, for example, the work of G.H. Ojha, Kaviraj Syamal Das, Jams Tod, Jagdish Singh Gahelot, V.N. Misra (1967), Dasharatha Sharma (1966), and Kailash Chandra Jain (1972). The Mewar, the land of secrifiee tells us its glorious history.
3. Sharma, D. (1966). "Rajasthan through the Ages". Vol I, pp.50.

Factors in the early history of Mewar :

In the latter phase of early history of the region, several kingdoms came into being like Moryas⁴ (C.272-232 B.C.), Guptas⁵ (C.4th A.D.) Harsha⁶ (C.640 A.D.) and Guhils (C.647-1000 A.D.) and one another Kingdom "Vagada"⁷ founded in C. 9th A.D. by Parmara Chiefs and Arthena was made its capital city⁸ (Fig. 2.2) but the Guhilots of Mewar along with many dynasties sprang up in northern India (during C.647-1000 A.D.) was the most important one. The dynasity was founded by Bappa Rawal (Kal Bhoj)⁹ of the Guhilot family in Mewar in C.728 A.D. He collected the Bhills of Aravallis around him and made his kingdom strong. His son Guhila conquered Chitor and made it his capital city.¹⁰ Abul Fazal¹¹ mentioned in his Ain-i-Akbari that the chief of Mewar formerly called Rawal, but for a long time past, had been known as Rana. He also argued that Guhilot clan descended from Noshirwan of Berar.¹²

- 4. Davis, C. Collin. "Historical Atlas of Indian Peninsula" Ed. 2. Oxford University Press. 1959. p.13.
- 5. Ibid. p.19
- 6. Ibid. p.21
- 7. Vagada probably originated from vaggala, which means forest. The Vagada probince of Rajasthan comprised the districts of Dungerpur and Banswara as well as the southern part of Udaipur district (Jain, K.C. (1972) pp.32)
- 8. Sharma, D. op. cit. pp.673.
- 9. Ojha, G.H. Udaipur Rajya Ka Itihas, Part I, 19 pp.102.
- 10. Joshi, P.S. Dawhare, M.R. and Pradhan, J.V. "The Rajput Age" India after Harshwardhan. Ancient History Civilisation and Culutre. pp. 295.
- 11. Abul-Fazal - Ain-i-Akbari-Trans-Jarret, H.S. revised by J.N. Sarkar. Vol II (1949). pp. 267-270.
- 12. It is asserted that a daughter of Noshirwan whose queen was a daughter of Maurice of Constantine pole marred to the Udaipur royal family. (ibid).

Mewar Through The Ages

MILES 40 20 0 40 MILES

ASHOKA EMPIRE 250 B.C.



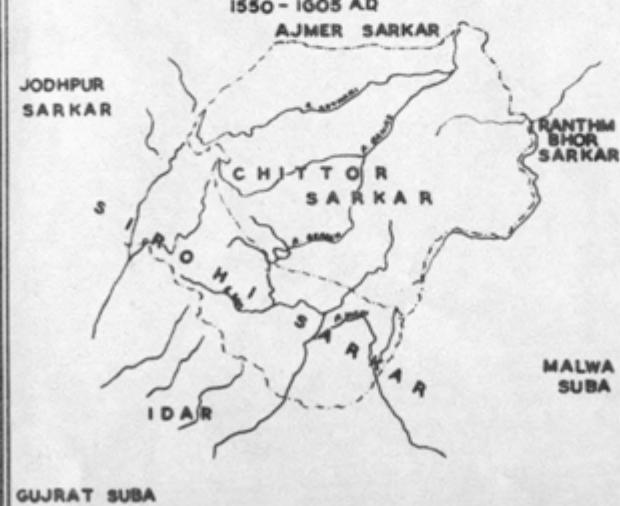
GUPTA EMPIRE C. 4th AD



HARSHA EMPIRE C. 640 A.D.



AKBAR PERIOD
1550 - 1605 A.D.



MARATHA PERIOD
17th - 18th



BRITISH PERIOD 18th - 1947th



FIG. 22

II. Medieval Period : (Based on Ain) :

After 10th century A.D. the fort of Chittor which was the fame of the Moryas, Parmaras, Solankies, Chouhans, and the Gahils, the center of their power and founten of Ranas Power as well as their dominion¹³ got a peculiar strategic importance, and had also been recognised by the ruler of neighbouring areas. The powerful Hindu King of Gujarat, and Malwas always wished to have this fort under their control. After the establishment of Muslim power in India, the Sultan of Delhi (Allaudeen) attacked and conquered it and changed its name as Khijirabad¹⁴ after the name of his son Khijir-Khan who was made the subedar of Chittor in 1326 A.D. But Rana Hamir again captured it, since then the descendants of Hamir had been ruling over the land of Mewar.¹⁵

After Temur's invasion the independent Muslim Kingdom of Malwa and Gujarat made repeated attempts to capture it. Soon after consolidating his position Akbar conquered it in 1968 A.D.¹⁶ Mughals were interested in this area because it was on the Agra-Surat route and connected by link routes with Ajmer¹⁷

13. Abul-Fazal - The Akbarnama, Trns. H. Beveridge. Vol. II. Calcutta (1907), pp.464.

14. Guhilot, G.S. (1962) - "Mewar Rajya ka Kendriya Saktiyon se Sambandh". pp.4.

15. Ibid. 4-5.

16. Mathur, H.N. (1973) "Muslim attack on Chittor". A.I.H.R. pp.29.

17. Which was the headquarter of the suba of Ajmer, Situated at the pinnacle of the plateau had always been considered pre-emntly used by very imperial power. In order to keep control over the rulling chiefs of Rajasthan, the Mughal made it a suba. (Abul-Fazal - Akbarnama). Vol. III. pp.146.

a spine of control to all over the land. Lastly they were interested in this area since all Rajput Kingdoms of Rajputana were under the repression of Mughal power except Rana Pratap who did not recognise Mughal's sovereignty. After Akbar's occupation of Chittor in 1568 it was constituted as a Sarkar of Ajmer Suba with number of parganas. (Fig. 2.3).

Administrative Units formed by Akbar :

Two Sarkar's were formulated in the area of Mewar. One of them was Chittor covering almost part of Mewar, and was fully dependent on it. Its length was 40 Kos by 30 in width and it has three famous fortresses namely Chittor, Kumalmer and Mandal. Second one was Sirohi Sarkar which was partly under the area of Mewar. Moreover only two big parganas namely Dungarpur and Banswara were mainly under Mewar, although these parganas were included in the Suba of Ajmer for revenue purposes, but politically they were attached with the suba of Ahmedabad (Gujarat).¹⁸ These two parganas were separately identified in Ain-i-Akbari as independent administrative units (Fig. 2.4).

Extent and Boundaries of the Sarkar's :

The boundaries of the Sarkars have been drawn taking physical as well as political information into consideration. Thus the river courses and mountain crests have been recognised as the boundary lines. The above respective Sarkars were situated in the southern part of the suba of Ajmer, and have been demo-

18. Banerjee, A.C. - Lecture on Rajput History. No. 31. pp.9.

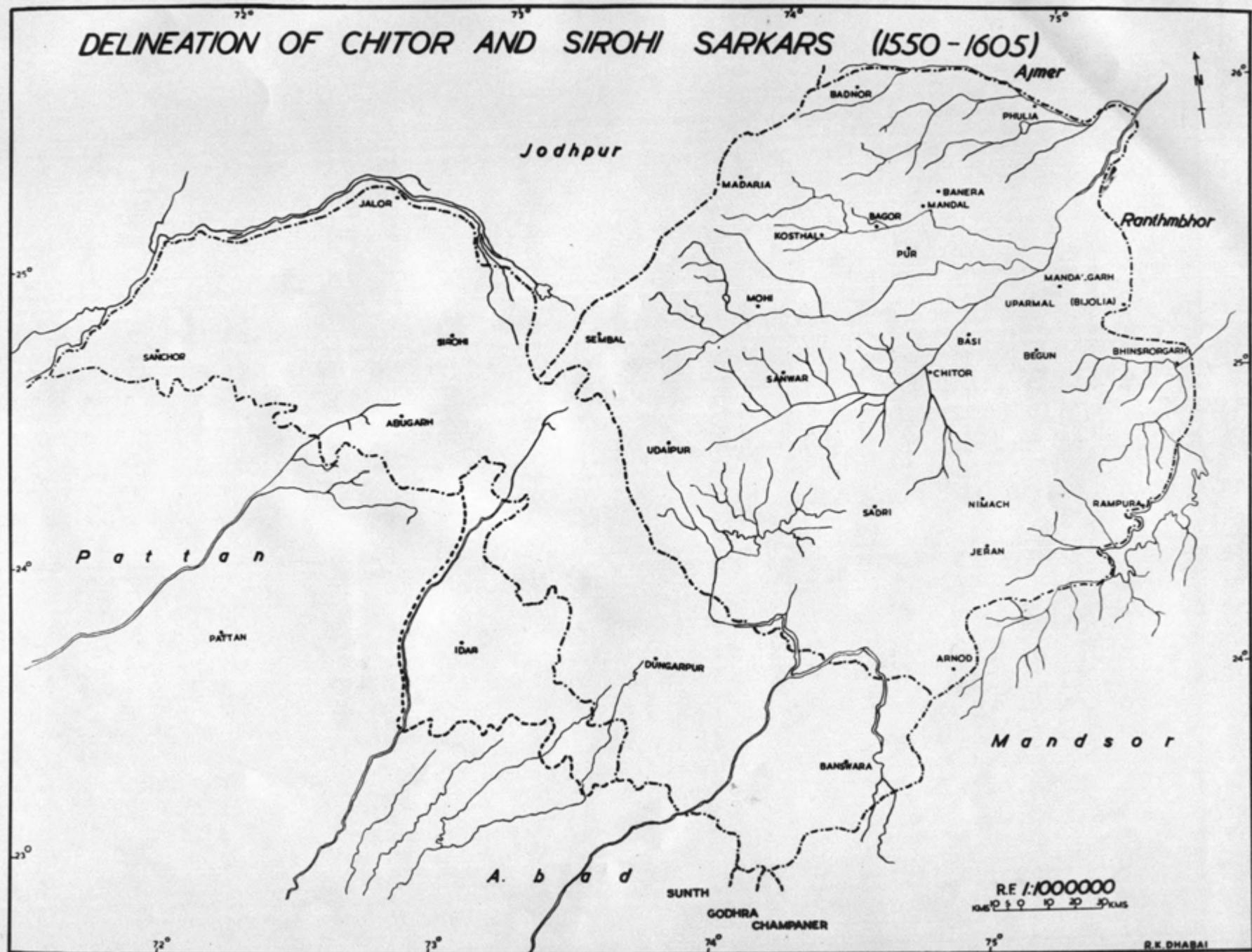


FIG. 2/3

rcated in the north by Khari and Sukri river, west by Aravalli crest on the one hand and the Rann of Kutch on the other; in south by political boundary of Rajputana and east by Chambal river. Politically both Sarkar's were surrounded by north and north-west by the Sarkar of Ajmer and Jodhpur, east by Sarkar of Ranthmbhor of the suba of Ajmer, and by the Sarkar of Mand-sor of the suba of Malwa, in south by the Sarkar of Pattan, Ahmedabad, Sounth, Champaner of the Suba of Gujrat and by an independent territory identified as Ider (Fig. 2.4).

The two respective parganas of the Sirohi Sarkar (Dungarpur and Banswara) appears in the south of Chittor Sarkar, and were extended east to west between the fringe of Chittor Sarkar on the north and south by the Suba of Gujarat.

Both the Sarkars were extended astronomically between $23^{\circ}15'$ and $26^{\circ}30'$ north latitudes and $71^{\circ}31'$ and $74^{\circ}40'$ east longitudes. They covered an area of about 60,000 sq. kms.

Administrative Structure:

In the region of Akbar, northern India was divided administratively into number of Subas, Sarkars* and Parganas*. The division of a state into units of administration was in vogue since the early medieval days. After Akbar's occupation on Chittor (1568), it was made a Sarkar and was subdivided into number of parganas. Prior to Akbar's administration the administrative units were grams, Mondals and Durg with head of

* Subas are subdivided into Sarkars while Sarkars into Parganas (revenue units).

Gram styled as the Gramin, Mandalidhipati for Mondals and Durgadhipati for Durgas.

Pargana Administration :

The word pargana was corrupt form of the Sanskrit word pratijagaranaka or protigana. It was an aggregate of a certain number of villages.¹⁹ The Chittor and Sirohi Sarkars were divided into 26 and 6 parganas respectively (Fig. 2.6).

Oldham, gave the definition of pargana as group of villages and a sub-division of a district. In the early days of Mohmedan Empire pargana appeared as a cultivated space in the forest occupied generally by a single, but some times by more than one fraternity or clan. It is evident that there were parganas in ancient India consist of a group of 100 villages or less than that, and these continued to exist throughout the Sultanat period under various names. Akbar improved the pargana administration. First of all he divided sarkars into number of parganas and their boundaries were fixed. The head quarter of each pargana was called as Mahal. The information about the topography and spacial feature of their histories, inhabitants and land tanure system of each pargana were collected and recorded. Every pargana under Akbar had a Shiqdar, an Amin, a Treasurer, a Kanungo and writer or Karkem, each of them had his official establishment.

The Shiqdar, who worked under the supervision and

19. Smith, V.A. - "Akbar - the Great Mughal". pp.290.

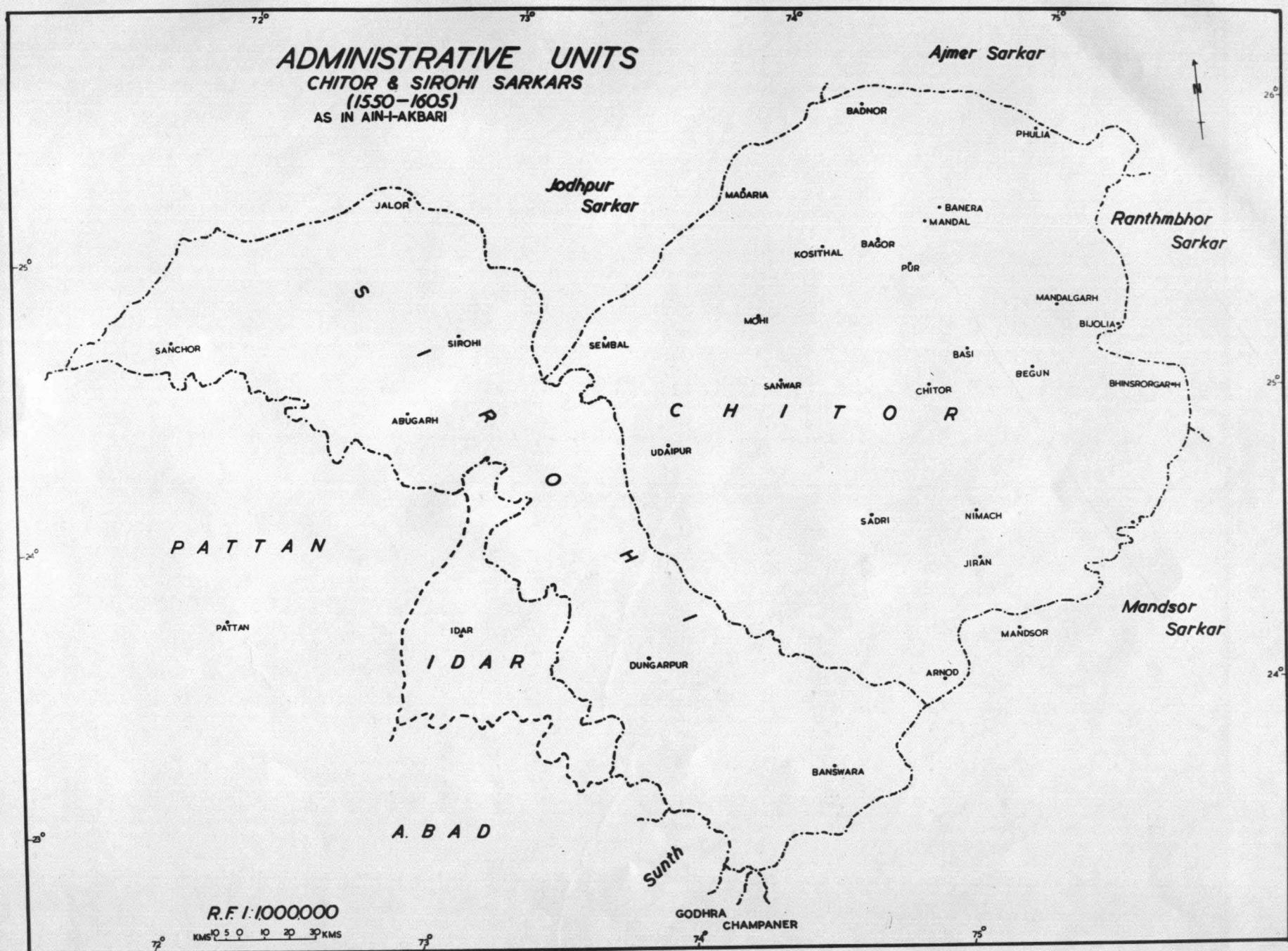


FIG. 2'4

control of the Faujdar of the Sarkar, was incharge of the general administration of the pargana. He was responsible for law and order and for the administration of original justice. He was thus the executive officer of the pargana and also its Magistrate. The Amin was directly concerned with the assessment and collection of revenue of the pargana.

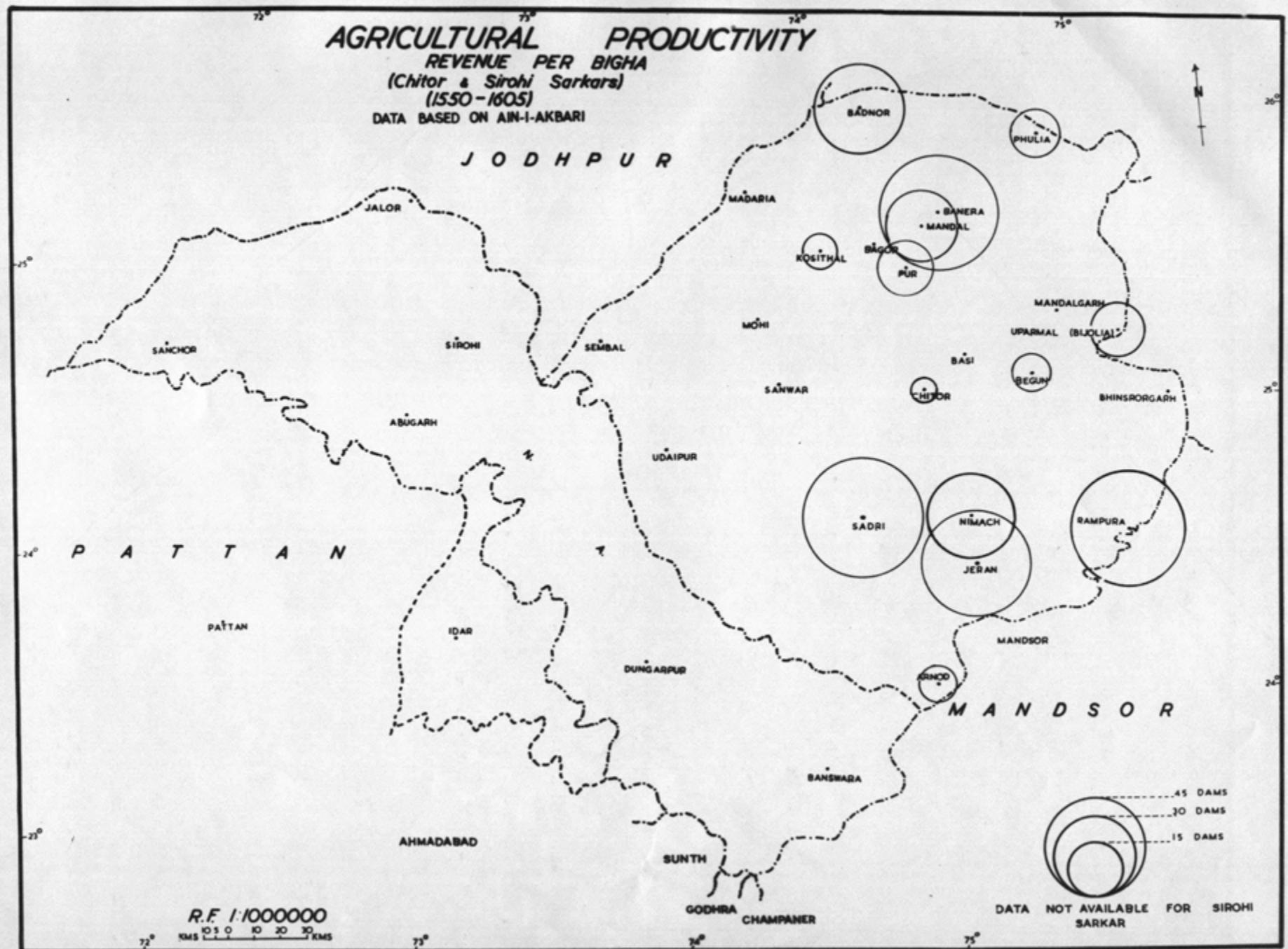
In fact they were required to work as a team and their assistants were paid in common. The commission of one dam per bigha of land was charged. The Kanungo kept the revenue record. In this period as already noted that the Chittor was in the Mughal hand and attempts were being made to introduce order by means of measuring land revenue and dividing the Mughal possession into districts. According to Ain-i-Akbari in the Sarkar of Chittor there were 26 parganas with their respective Mahals including Mandalgarh, Mandal, Bednor, and Shahpura etc. The whole Sarkar measured about 1,678,800 bighas and 17 biswas, the revenue was estimated to be about 30,047,649 dams.²⁰

Indentification of Mahals :

Tbul-Fazl had given information in his Ain²¹ for the Sarkar of Chittor and Sirohi (Appendix 1) with respect to the Mahals or Parganas in detail. The administrative seats of Mahals were located almost at the geometric centres of the Parganas or Mahals and also on the trade routes so as to main-

20. Sharma, G.N. (1962). "Mewar and Mughal Emperor". pp.76.

21. John Dowson - "History of India". M.R.A.S. Vol. V. pp.326.



tain linkage with each other and for coordinating the revenue administration. The Parganas used to acquire the name by those centres sometime inter-changeably used to denote both the area or place.

Levels of Agricultural Efficiency of Mahals:

The agricultural productivity of each Mahal has been calculated on the basis of revenue data (per bigha Fig. 2.5). However, the general pattern that emerged by this analysis of data, indicates that places located in and around the river basins having fertile soils were able to pay higher revenue than those located on plateaus or in the hilly areas. Thus the Mahals situated along the Chambal, Banas and Khari rivers paid much more revenue like Rampura, Badnor, Banera, and Jeran, than those Mahals situated in hilly or rugged areas, such as Chittor, and Begun.

Among all the Mahals of the Chittor Sarkar, Rampura paid much revenue which contained about 7,000,000 dams and least revenue paid by Chittor to be 800,000 dams.

On the whole, the Sarkar of Chittor seems to have been very productive area since Medieval period as Abul-Fazal says in his Akbarnama that the area supplied sufficient for several years.²²

Locational Analysis of Mahals:

The technique (N.N.D.) has been attempted to find out the

22. Abul-Fazal - Akbarnama, Trans. H. Beneridge. Vol II. pp.464.

nearest neighbours of each Mahal of the respective Sarkars. The variables such as number of Mahals, total area, actual distance, and expected distance have been chosen for the purpose.

The first attempt of this exercise is to find out \bar{r}_a value that is equal to $\frac{\sum r}{n}$, which is defined as the mean of actual distance observed, worked out to be 38.03. Second step is to findout \bar{r}_e value i.e. the mean of expected distance and has been calculated to be .0005, by applying the formula:

$$\bar{r}_e = \frac{1}{2/P}$$

Where : \bar{r}_e = Mean of expected distance.

P = No. of Total points divided by total area.

N.N.D. or "R-N" value which shows the degree of departure from random to even or clustered distribution of settlements is the ratio of \bar{r}_a to \bar{r}_e . The formula for N.N.D. is given below:

$$R = \frac{\bar{r}_a}{\bar{r}_e}$$

Where : R = Degree of departure from random

\bar{r}_a = Mean of actual distance observed

\bar{r}_e = Mean of expected distance.

Applying the above formula, the "R" value of the Mahals has been worked out to be 1.7008. The result shows a tendency to be more regular (1.7008) than random distibution (Fig. 2.6). The regularity in the distribution of the headquarters of parganas

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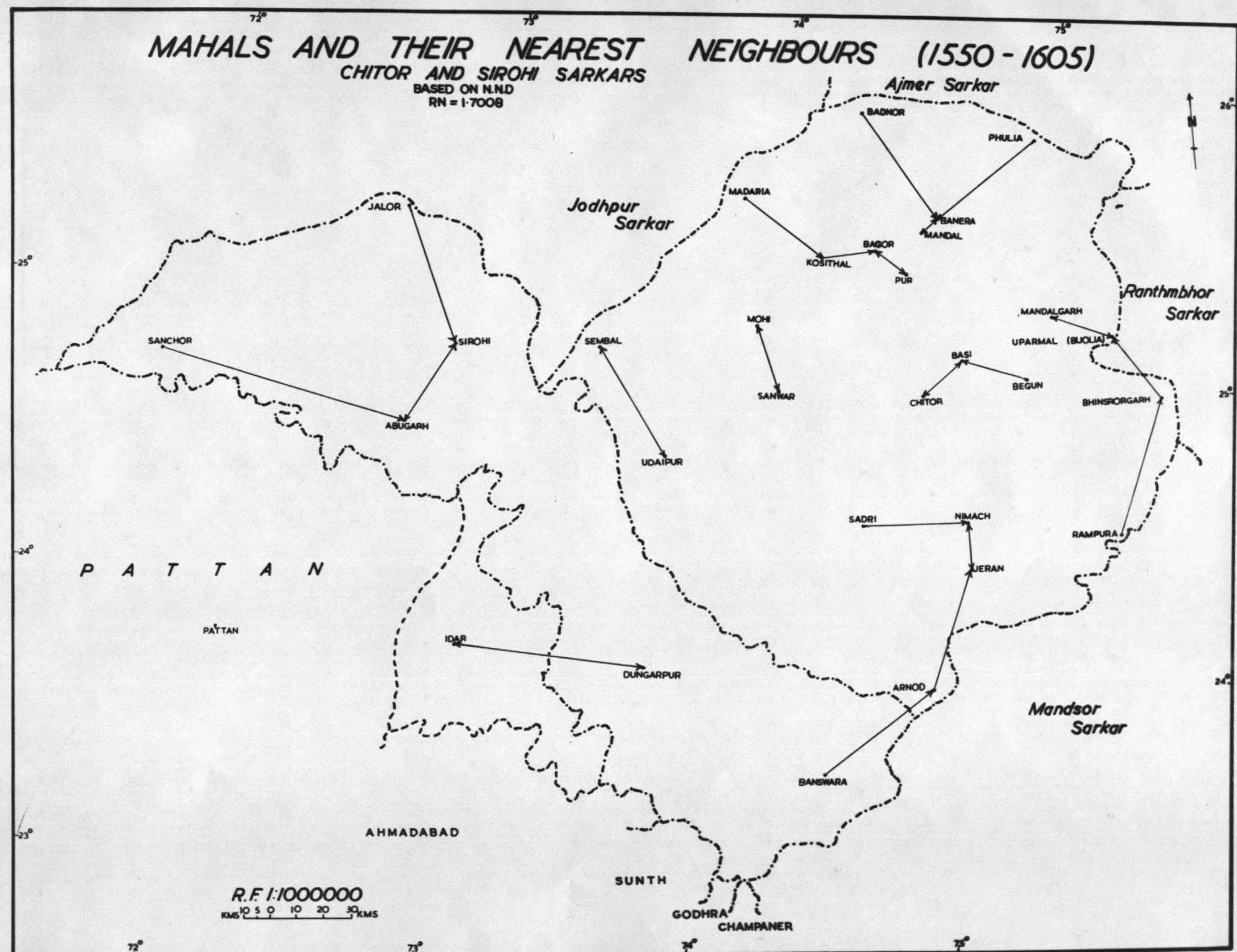


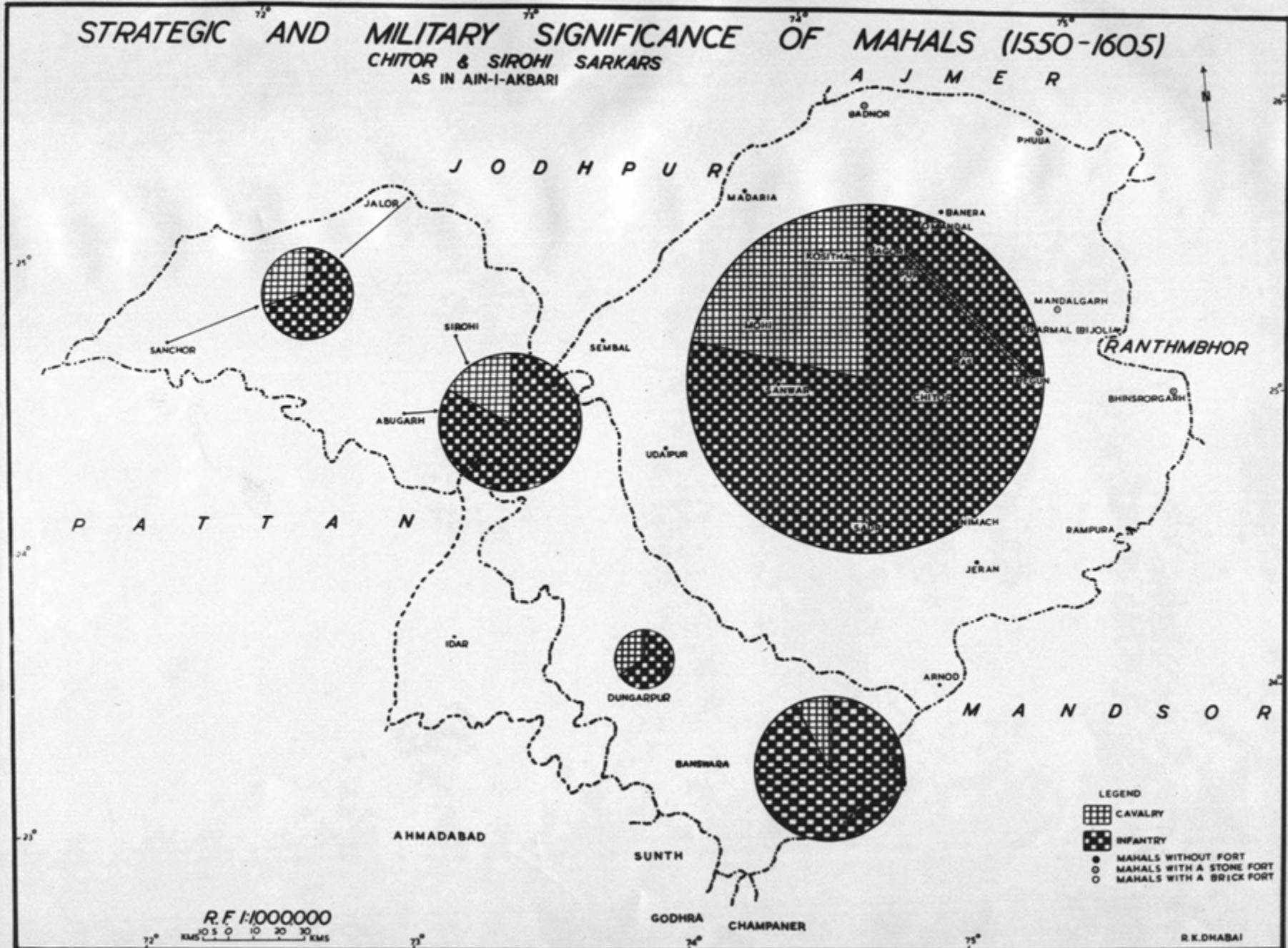
FIG. 26

was not a chance factor; their location was decided by the trade route connections and the geographic centrality of revenue administration. Besides, the spatial regularity was the essential part of Akbar's political administration common to most of the Sarkars and parganas of his time. These Pargana headquarters had great strategic importance from where the invasions were launched against any unruly and cessationist Jagirdars or Subedars.

Strategic and Military Significance of Mahals :

In medieval period, the strategic importance of the Mahals were significant in the sense that all Mahals of the Chittor Sarkar were the centres of Rajput clan, hence, the establishment of the authority gave immense prestige to the Muslim power and it made the task of subjugation of Rajputana easier.

All stone forts were located on the border of Sarkar (Chittor), such as Bednor, Phulia, Mandalgarh, Bhinsrorgarh and in the centre at Basi and Chittor. In the same manner the stone forts were established in Sirohi Sarkar at Sirohi, Jalor and Banswara. The location of the fort of Chittor increased its strategic value in order to establish their (Mughals) way over Malwa and Gujarat, and subsequently for deccan rulers of Delhi, who passed through Rajputana. It was essential for them to capture Ranthambhor and Chittor. The strategic importance of the forts in the route of Gujarat and Deccan also permitted



Allauddin to undertake an expedition against Chittor.²³ The conquest of Chittor was essential for Akbar's policy of the expansion of his empire. In 1562 A.D. he had entered into a matrimonial alliance with Raja Bharmal, the Kachawa ruler of Akbar. He (Akbar) expected that other Rajpur rulers would soon accept his sovereignty; he soon, however realised that Mewar was not going to make such a more attempt. He therefore, decided to undertake an expedition against Mewar. According to Abul-Fazal, Akbar objected to invasion of Mewar to punish Ranas. Akbar started his expedition on 19 Sept., 1567. He occupied Shivpur and reached Gagrun on the border of Malwa and Mewar. The total force of the Sarkar of Chittor was estimated about 22000 cavalry and 42000 infantry, and the Sirohi Sarkar contained about 7500 cavalry and 4200 infantry. (Fig. 2.7).

Major Routes :

As mentioned in Akbarnama that there were several routes between Agra and Gujarat, and Agra-Chittor-Udaipur and then toward Malwa, but Agra to Ahmedabad was main trunk route (Fig. 2.8). Akbar himself travelled between Agra and Gujarat twice performing onward and homeward journeys. As recorded in Akbarnama that during the second expedition of Gujarat, Akbar came at Ajmer and then marched toward Merta-Jaitaran-Sojat-Bhagwan-pura-Jalor-Disa-Balisara-Cotana and Ahmedabad. On his home ward journey, Akbar came back at Dholka-Kadi-Sidhpur-Sirohi-

23. Mathur, H.N. - "Muslim attack on Chittor". R.I.H.R. pp.30.

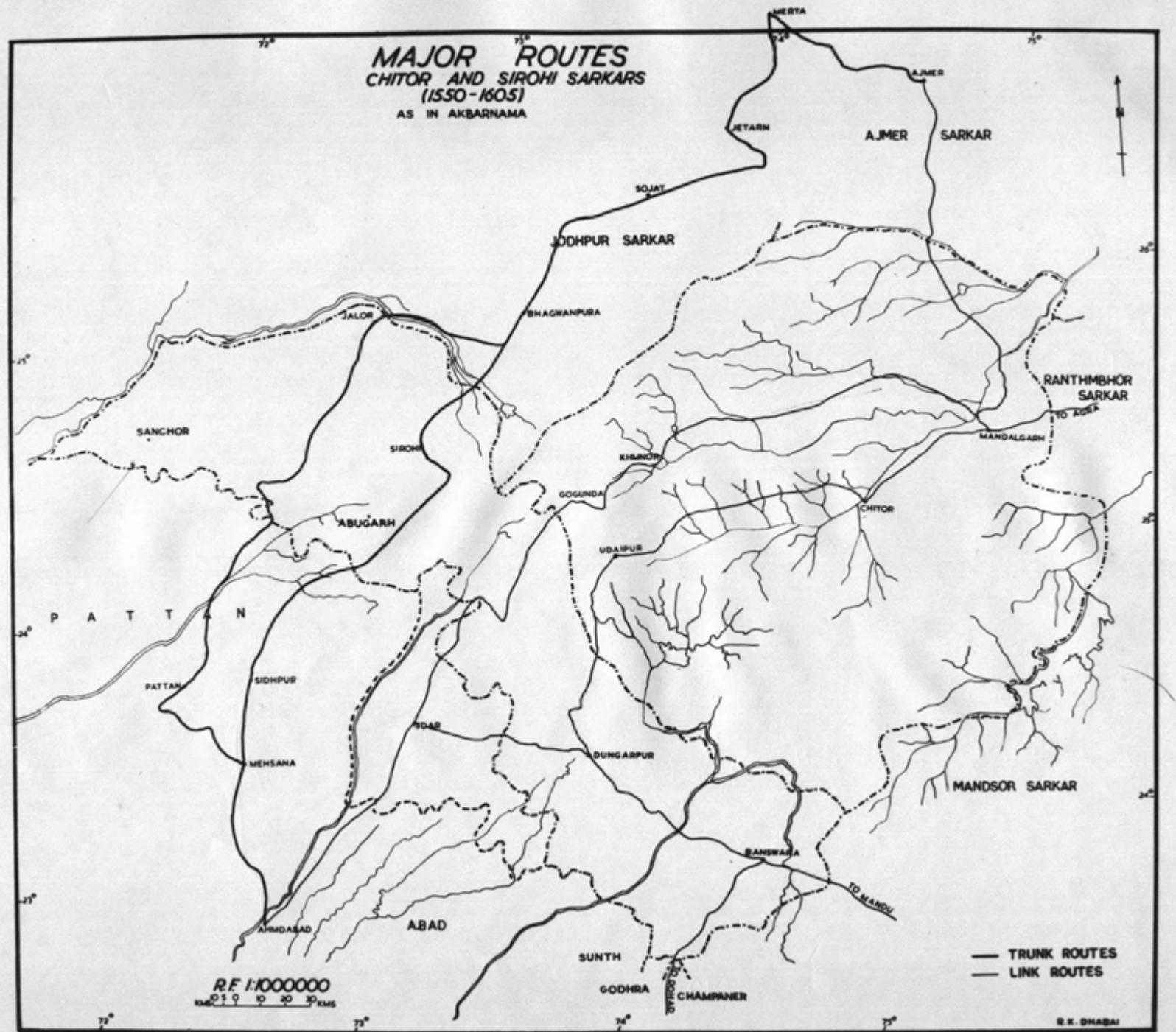


FIG. 28

Sojat-Jaitaran-Merta and then Ajmer (Fig. 2.8). It is interesting to note that the alignment of the major trunk route was guided by the alignment of Aravalli rather than the valley and followed the range. The route Ajmer to Sojat and Bhagwanpura was common on both ways, however, the onward journey was through Jator. Besides it, there were several link routes passing through Mewar. Abul-Fazal says in his Akbarnama that there was a regular route from Ajmer to Mandalgarh and from there to Gogunda and Khamnor; from there it crossed Haldighat and led to Idar - Panarwa and Ahmedabad stage by stage. Another link route was from Ahmedabad to Udaipur. Man Singh came Gujarat by this way of Idar to Dungarpur and thence to Udaipur. Raja Bhagwan Das also took the same route and reached Gogunda near Udaipur. This route was connected with Agra. According to Abul-Fazal, Malwa was connected with Udaipur through Dungarpur and Banswara. This route was adopted by Akbar and his Generals several times in the course of their invasions of Mewar.

Aspects of Economic Geography :

Although there was no valuable information recorded by Abul-Fazal in his Ain-i-Akbari and Akbarnama regarding economic conditions of the respective Sarkars, some hints are found here and there; like about mineral resources, Abul-Fazal says, that in the village of Chadar²⁴ there is a copper mine which is extremely

24. Var. Chawar, Chaura, Jawara, Chowra, in the I.G. (Under Udaipur) Jawar 24 miles south of Udaipur is said to have possessed zinc mine.

profitable.²⁵ In other places he also says that at Udaipur there is a mine of Copper. Thus it seems that the copper was the main raw material in those days. Agriculturally there were also some cultivated tracts and large grain fields, meaning wheat crops grown specially around Udaipur. Nensi also referred that in this region fertile areas as Oses. Wheat, Gram, Mung, Oil-seeds and Cotton were grown; Wheat and Gram were grown in Uparmal, Wheat, Rice, Gram and Pulses were sown in Mewar. Thus the economy of the inhabitants was mainly based on Agriculture and was the dominant activity of the living beings.

Modern Period :

After the end of Mughal era, the Maratha power became strong over the land of Mewar. They wanted to rule over it so there were many disputes over the parts of Nimbahera, Begun and Bhinsrorgarh, which some time came under Maratha power and some time under Mewar. Since the end of Mughal period until the advent of British Raj in India, the Mewar region experienced a period of turmoil and many old documents have been looted or destroyed. Repeated insurrection of Marathas led the Pargana rulers who rose to princets status because of decline of the ruling power in Delhi, to join hands with the British for two reasons - first to maintain their princely status, secondly to get military protection of the British Empire against Marathas. These princely states of Mewar entered into treaty with the

25. Abul-Fazal - Ain-i-Akbari. Vol. II. pp. 268 (Trans. H.S. Jarret).

British in 1818. After the treaty a political agency known as Mewar Agency was created with its headquarter at Nimach. The territory of Mewar Agency consist of the state of Udaipur, Dungarpur, Banswara, Partapgarh, and Kushalgarh, and one chief of Shahpura and one pargana of Tonk (Nimbahera).

In 1860-61 the headquarter was transferred to Udaipur when the designation of political charges was changed from Agency to Residency. (Fig. 2.2). At the time of the formation of Matsya union, Dungarpur, Banswara, Partapgarh and Shahpura merged into it on 25 March 1948, and a month after Udaipur also joined the union; there after it (Mewar) became a part of the state of Rajasthan in Independent India.

The historical description has been made here to understand the past political, economic and strategic dimensions of this region. The main emphasis in this context has been given to the Medieval period, because of the adequate information is available in Ain-i-Akbari, Akbarnama and in Tuzuk-i-Jahangiri. The Mahals of the Chittor and Sirohi Sarkar of the Suba of Ajmer were evenly distributed and they were heaving their specific strategic importance with respect to their location. So far as their economic base is concerned the parganas which were extended over the revenue tract were more productive, that is why they paid much more revenue than the others which were extended over the hilly and plateau tracts. The major trunks and link routes followed physiographic as well as river courses

directions and they were connected at major strategic places (Chittor, Kumbhalgarh and Mandalgarh Forts) and Haldighati etc. etc. The entire area of the study was ruled by Sisodia clan from C. 7th A.D. to the 1947, except at some invasion times by the rulers of Delhi.

The present day Mewar is the amalgam of the princely states created and persisted in the British period. Most of these states were under-developed except a few and the princes were busy in keeping their status quo relation with the British Raj at Delhi rather than developing their states economy. At the time of their merger with Independent India there was no resistance but keen willingness. This very fact shows that they were not economically sound at this stage.

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CHAPTER III

THE PHYSICAL BASE OF THE REGION

Introduction:

The Mewar region is wholly situated on the eastern slopes of the Aravallie hills which guard the region from the Marusthali of the Rajputana on the west while the extended arm of which toward Malwa plateau latitudinally divides the region into north and south and also acts as the Great Water Divide of the central-west India. The northern portion is drained by the up-stream tributaries of the Banas-Chambal system, joining the Jumna, then to the Ganga Ultimately to the Bay of Bengal; while the southern portion by the Mahi system flowing toward the Arabian Sea. The region represents the last leg of the Indian monsoon wheather and records low rainfall in the northern portion. The bare rock surface of the Aravalli system with high temperature and low rainfall results in a semi-desertic thin soil mantle with deciduous jungal vegetation. In most cases it is water balance which determines the greenness of the surface but fortunately this is the wettest part of Rajasthan.

Physiographic Features and the Underlying Structure:

The present study aims to analyse the natural environmental elements with particular reference to Geology, physiography, drainage pattern, general climatic conditions, soils and vegetation of Mewar. Geologically the Mewar represents the ancient block of Peninsular India, an oldest display of rock

arrangements of various geological areas, epochs, and periods. The rock formation ranges from Archean (more than 600 million years old) to cenozoic (eocene, about 300 million years old) periods. The succession of rock formations is as follows:

(1) Pre-Palaeozoic :

The archean groups which include the Bundelkhand and Banded gneiss complexes are the oldest rock formation of the region. The Bundelkhand gneiss is mostly a normal granite in composition, pink to reddish in colour and is mainly found in the Berach valley between Chittorgarh and Bhilwara.¹ The Banded gneiss complex which belongs to pre-Aravalli rocks is exposed in central Mewar and swings toward east to the Banswara and north of Dungarpur district.² These rocks have attained their greatest complexity in the east of Udaipur city. The rocks which may be regarded as Aravalli system belonging to the Dharwarian group occupy a wide surface extent of Mewar, constituting the vast system of the pre-cambrian sediments.³ This formation posses the most diverse lithological character being a complex of all kind of rock-plastic sediments. Chemically precipitated rocks volcanic and Plutonic rocks all of which generally show an intense degree of metamorphism.⁴

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1. Krishnan, M.S. Geology of India & Burma. Madras. 1968. pp.118.
 2. Mishra, V.C. Geography of Rajasthan. New Delhi. National Book Trust of India. pp.13.
 3. Wadia, D.N. Geology of India. New Delhi. 1969. pp.99.
 4. Ibid. pp.95. 3rd ed. revised 1961.

In Aravallis which covers large part of Mewar are exposed into two wide belts - one near Udaipur, and the other on the east near Chittorgarh separated from each other by a wide expanse of Bundelkhand gneiss. This system is largely composed of Argillaceous ferruginous limestone in two faces-one being a benticular ferruginous limestone around Udaipur, and another unmetamorphosed facies in the eastern part of the region, mainly east of the great boundary fault⁵ known as Binota Shale, they are olive, brown, variegated with purple sandy and micaceous-shoft and flakey.⁶ The post Aravalli formation is the Railo series; they are exposed in large narrow belts in the north of Udaipur, mainly limestone, usually white with some times at their base a thin quartzite and sand stone occasionally conglomeretic; they are free from igneous intrusive perhaps because of the impenetrable nature of the rock. The main exposures of this series are found in the eastern and central Mewar, particularly in the north of Udaipur city and then through Nathdwara, Rajsamand and Kankroli. They are also numeriously found in the Banera and Jahazpur hills. The exposure of Bhagwanpura limestone is also considered to be Railo.⁷

Delhi system, which is the best rock formation has developed in the western Mewar, specially in the central Aravalli probably in the lower Cuddaph age (lower pre-cambrian) with

5. Krishnan, M.S.op.cit (68). pp.121.

6. Mishra, V.N. Pre and Proto History of Berach basin South Rajasthan. Decean College Poona. pp.3.

7. Krishnan, M.S.op.cit. pp.123.

folded rock structure in the numerous ridges continuous upto south-west. These rocks are comparatively thinner and less metamorphosed in eastern Mewar; sawa grits, shals, and Jeran sand stones are the main rocks of this formation.

(2) Palaeozoic:

The rocks which were formed in the upper pre-cambrian period exposed in the south eastern Mewar, west to the Deccan trap are numerously known as Vindhyan system of this era. They also occupy the eastern part of Chittorgarh district and Mandalgarh tehsil of Bhilwara district in a crust like belt in the north eastern part of the region. It has been represented by the Malani series of the Vindhyan system. The major formation being the shale sandstones, limestones and slates, with bracias ore and conglomerates.⁸

(3) Mesozoic:

The south eastern part of the region covered by the lower tertiary rocks of the cretaceous and eocene period, termed as Deccan trap. By the process of denudation the under lying areas of older rocks belonging to Delhi system has been exposed; the underlying rocks were shales quartzites, and limestones which rest unconformably upon gneiss.⁹

Physical Features:

Mewar which covers the whole southern part of Rajasthan, has been physiographically divided by several geographers.

8. Wadia, D.N. op.cit (69). pp.8.

9. Erskine, K.D. Rajputana Gazetteer (1908). Mewar Residency (Partapgarh State). Vol. II A Text. pp.196.

Table I
Geological Formation of Mewar

	<u>MEWAR/A.M.</u>	<u>CHITOR</u>	
Delhi Systems	Cale, Gneisses Cale, Schists Biotite schists Quartzites Basement arkose grits	Sawa shale & grit	Jeran Sandstone
Railo Ser.	Garnetiferous biotite Schists Railo (Rajnagr) Marble Local Basalgrit	Qails (Bhagwanpura) limestone	
Araavalli System	Phyllits Cherty Limestone Quartzites & Composite gneiss Basal quartzites, grits & local Conglomerates Local thick Volcanic series	Khardeola & Kanoj grits Bhadewar quartzites Vague Uneonfernity	Great Boundary Fault
		Ranthmhbhor Quartz- zites Shales & Cherty Limestones Basal quartzites & grits	Binola Shale
	Bandad gneiss Complex	Bundelkhand Gneiss	

Source: Wadia, D.N. - Geology of India, New Delhi; 1969. pp.101.

O.H.K. Spate divided it into two meso and two micro regions:

(i) Araavalli range (ii) Udaipur Hills - it is further divided into two parts (a) Mewar (b) Bagar.

A.N. Bhattacharya, divided it into three parts namely (i) Mewar Hills (ii) Middle Mahi Basin and (iii) Upper Banas Plain, which are the parts of Araavalli-Satpura upland. One

more significant attempt was made by Jasbir Singh in his Agricultural Atlas of India. He divided it into four divisions, namely (i) Aravalli range, (ii) Eastern Rajasthan upland, which covers Bhilwara district as a whole, and Nimbahera, Choti Sadri, Bari Sadri, Dungla Bhadesar, Kapasan Rasmi, and Gangrar tehsils of Chittorgarh district, (iii) Madhya Bharat Plateau: It covers uparmal, Mandalgarh, Begun and Chittorgarh tehsils, and (iv) Malwa Plateau: which covers Banswara District and Partapgarh tehsil of Chittorgarh district.

Thus taking above attempts into consideration, the region has been divided physiographically into three meso and eight micro geomorphic regions. The scheme is as follows (Fig. 3.1).

(I) Southern Aravalli Range and Hilly tract

- (a) Bhorat Plateau
- (b) South Central Aravalli

(II) Northern Mewar Plain

- (a) Upper Banas Plain
- (b) Berach Plain
- (c) Kanthal Plain

(III) Southern Mewar Plain or central Mahi Basin popularly known as Bagar.

- (a) The Bagar Plain
- (b) Partapgarh Hills
- (c) Dungarpur Hills

Physical Regions Of Mewar

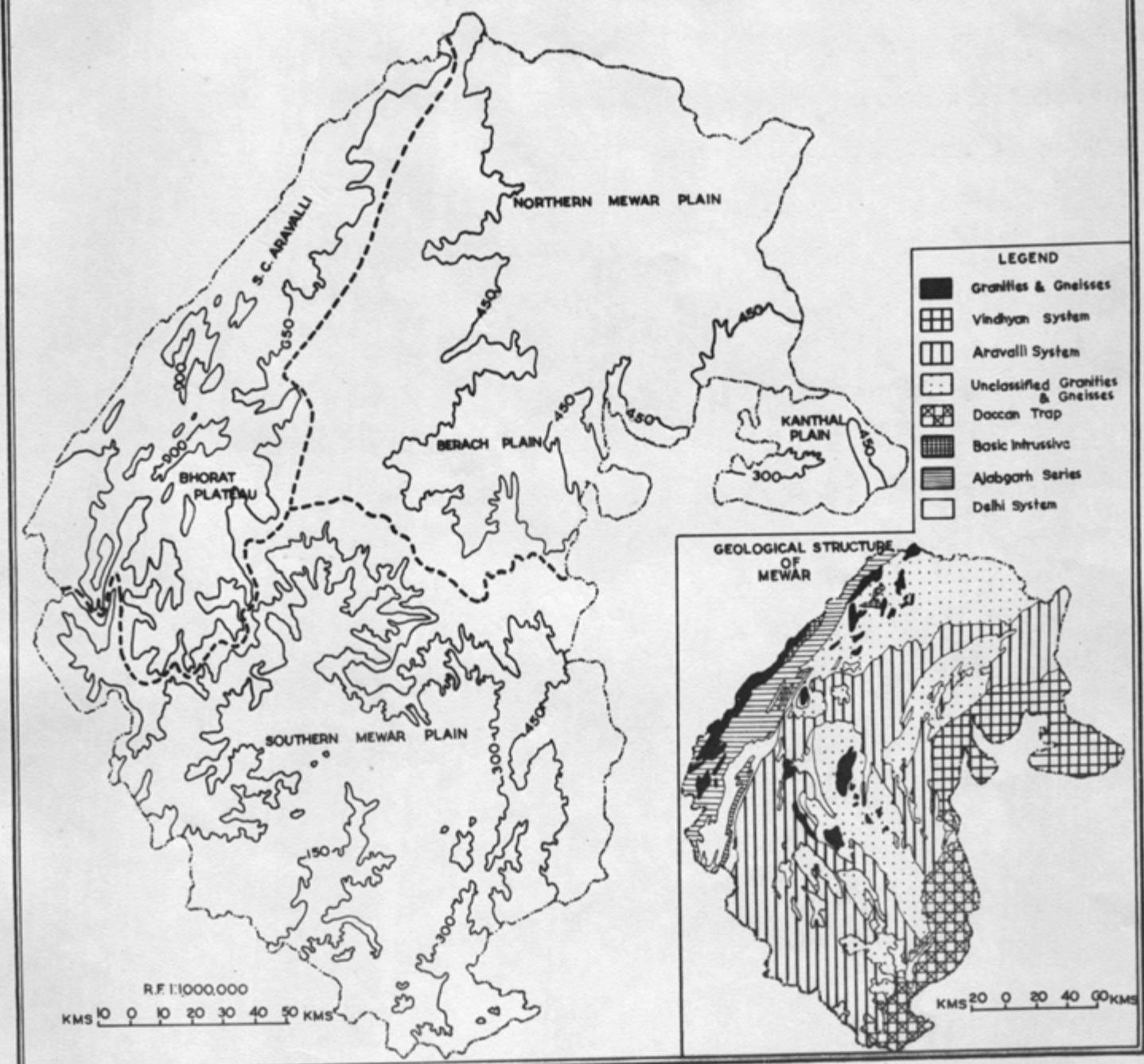


FIG. 3'1

(I) Southern Aravalli Range and Hilly Tract:

Physiographically it is a dominant part of Aravallis which falls in Mewar. The general altitude of the region is above 650 metre and it extends longitudinally from Bhim tehsil in the north to the Dungarpur tehsil in the south. The region separates Marwar in the west from the Mewar in the east, extending along the western border of Udaipur district. The Aravalli within Mewar appears like a triangular shaped land form, having greatest width as well as height in the south. Thus the whole western portion of the Mewar is part of Aravalli and widely known as south Aravalli region. The Aravalli has derived its name from "Ada-vala" - a Rajasthani word meaning "A beam laying across".¹⁰ This region has been further divided into two sub-regions.

(a) Bhorat Plateau:

It is the highest section of the Aravalli ranges in the north west of Udaipur between Kumbhalgarh and Gogunda, locally known as Bhorat Pleateau with extension toward north-east known as Deogarh-Madaris hills. The average elevation of this plateau is 1225 metre, around Udaipur and in the south east of it, the hills are characterised by a great mode of spurs and curved ridges, locally known as Girwa, the girdle of hills. The Girwa tehsil of Udaipur district seems to have derived its name from this feature. Most part of this hilly region is covered with rocks, hills and fairly dense jungle, most particularly rugged

10. Sharma, Dashratha - (1966). Rajasthan through the ages, Vol. I. pp.1-2.

topography. This is the wildest portion of Aravalli and was also known to the British political administration as the Hilly tract of Mewar.

(b) South Central Aravalli Region:

The highland slopes of the Mewar east of Aravalli ranges, west of upper Banas Basin and north of Bagar plain look like a crocodile in the central part of the region throwing two legs like off-shoots toward south and east and form the Great Indian Water Divide. The region also provides the origin of northeast and south flowing rivers and form the piedmont slopes of the old Aravalli.

In the eastern part of the region there are three separate dissected uplands. They are numerously found in Partapgarh, Chittorgarh, Nimbahera, Begun and in Mandalgarh tehsils. The portion which falls in Partapgarh and Nimbahera tehsils is the part of Malwa plateau of Madhya Pradesh and the remaining part which lies east to the Chittorgarh, Begun, and Mandalgarh is a part of Madhya Bharat plateau or Vindhyan upland, among these high lands the land which covers the part of Mandalgarh around Bijolia is locally known as Uparmal. In many ways they are eastern extensions of the Aravalli but is different in other way and only flank the region on the eastern margin.

(II) Northern Mewar Plain:

There are two big plains in Mewar - one of them in the north and north east side, has been termed northern Mewar plain

and another which is south to the great boundary fault, known as south Mewar plain of Bagar plain. Northern Mewar plain is a peneplane drained by Banas and its tributaries and southern plain is an undulating as well as forested area, drained by Mahi and its tributaries and it is particularly inhabited by aboriginal tribes.

The northern Mewar plain covers almost the whole of Bhilwara district, and portions of the Rasmi, Gangrar, Begun, Kapanan, Bhadesar and western part of Chittorgarh tehsil of the Chittorgarh district. This plain may be divided into three sub-regions: namely Banas plain, Berach plain and Kanthal plain.

(a) Upper Banas Plain:

It is a peneplane rather than a alluvial plain drained by Banas and its tributaries having an elevation of about 300 metre normally. The plain has been formed on the archean gneiss and its slope gradually decreases toward east and north east. The Banas is super-imposed in a most striking manner. This plain is poor, having thin soil but the numerous pegmatite and quartzite dykes facilitate the construction of tanks.¹

(b) Berach Plain:

It is a stony plain covering Kapanan, Rasmi, Gangrar, western part of Chittorgarh tehsil and some parts of Kotri tehsil. The plain is drained by Berach and its small tributaries.

11. East, W.G., Spate, O.H.K. and Fisher, C.A. (1971) - The changing map of Asia. Menthunen & Co., Ltd., 1971. pp.129.

(c) Kanthal Plain :

The area around the Bhinsrorgarh fort is locally known as Kanthal plain. It has been separated by Uparmal high land from Banas plain.¹²

(III) Southern Mewar Plain Known as Bagar :

This undulating plain attenuated with and walled by the hills lies south of great Indian Water-shed, previously was known as Vagada or forest.

(a) The Bagar Plain:

The Bagar plain of Mewar covered eastern part of Dungarpur district, Banswara and southern part of Udaipur district. In early times the region was full of forest and mountains. The Vagada Samagha after the name of this province is mentioned in an inscription of V.S. 1051. There is a mention of this Vagada in the inscription of V.S. 1242, V.S. 1291, V.S. 1308, and V.S. 1348 that this name was retained upto the C. 16th A.D.¹³

(b) Partapgarh Hills:

In the eastern part of southern Mewar plain, the height comprising the contour line of 450m. is designated here in this context as a Partapgarh hills which are specifically part of Malwa plateau of Madhya Pradesh.

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12. Mehta, B.S. (1971) "The Impact of Geography: The Glory of Mewar" AllRajasthan Geographers 5th Academic Conference, 1971-72. pp.99-100.
 13. Jain, K.G. Ancient cities and towns of Rajasthan: A study of culture and civilization. Pub. Motilal Banarasidas, Delhi. pp.32.

The Drainage Pattern:

The drainage pattern refers to a particular plan or design, to which the individual stream courses collectively form.¹⁴ The lay out of Mewar's streams has been determined by the Great Indian Watershed, which divides the regional drainage into two parts. The northern streams which flow from west to east designated as the Banas river system toward the Bay of Bengal and the southern streams flow from north to south with their east-west tributaries. The former courses of streams make a consequent type of drainage while latter performs dendritic pattern. The major streams of the whole region are Banas, Berach, Khari, Kothari, Mansi, Mahi, Som, Jakam, Anas, Wakal, Gomti and Manas. Besides, there are so many minor streams like Nekadi, Chandrabhaga, Bet, Kaluri, Moran, Nori, Kuwal, Gargal, Godi, Gamti, Hukli, Karmai, Sukli, Kaloi, Chap, Pundia, Bhunan, Erau, Kharar, Warda, and Gambhir. The river Banas - "the hope of forest" rises in the Khamnor hills or Aravalli about five kilometres from the fort of Kumbhalgarh and flows southward until it turns toward east to northeast after the confluence of the streams viz. Berach on the right bank and Kothari on the left bank finally leaving Mewar near the cantonment of Deoli.¹⁵

Berach, the main tributary of Banas, rises to the north of Udaipur, and is first known as Ahar, after the village of

14. Thornbury, W.D. (1954) - Principles of Geomorphology, New York 1954.

15. Erskine, K.D. - Rajputana Gazetteer. The Mewar Residency. Part II A (1908). pp.6-8.

this name. It flows at first southeast past Bedla and close to Udaipur into the lake called Udaisagar and is called Udaisagar-ka-Nala, beyond it, is known as Berach; near Chittorgarh it receives the water of Gambhiri, then it turns north east and falls into Banas at the place known as Triveni Sangam, little west of Mandalgarh.

Kothari, is a second major left hand tributary of Banas; it rises in the Aravalli near Dewair, after completing its 90 miles journey, it joins the Banas near Nandarai.

Apart from these northern rivers, the other tributaries of Banas are Khari which form the northern frontier of Mewar with its tributary known as Mansi.

The southern part of Mewar is drained by Mahi and its tributaries.

The Mahi (The Mophis of Ptolemy and the Mais of the periplus) is a master stream of the Bagar plain, rises in Madhya Pradesh. At first it turns north, next west and lastly north west. It then enters Banswara district and continues in northern direction till it reaches the Udaipur frontier for the next seventy miles and turns into south-west direction performing the boundary between Dungarpur and Banswara district. The course of this river is guided by the Partapgarh and Dungarpur hills.

Som, the major left hand major tributary of Mahi, flows south east from the hill near Bichadhera till it meets the Mahi.

Jakam, rises in the south east corner of Udaipur district passing through Dhariyawad and falls into the Som.

Wakal rises in the west of Gogunda and flows almost due south about forty miles past Oghna to Manpur, where it takes a sharp bend to the north west, till it reaches the cantonment of Kotra, it then turns to the west and five miles lower down, joins the Sabarmati in Idar territory.

The drainage system of Mewar is highly restricted by its physiography and curves out a number of drainage basins comprising the river courses of head-water regions of them.

Stream Analysis :

The study of drainage system technically expressed is the study of fluvial morphometry, which is a recently developed branch of the various morphometric analysis. It deals with the measurement of the geometrical properties of the land surface of a fluvial erosion¹⁶ system. The linear properties of the stream segments have been taken into consideration avoiding the width and gradient of the streams. Thus the planimetric study, the measurement in a single plain of the stream segments with its length and arrangement has been employed here as developed by Strahler.

Ordering of Streams :

Fig. 3.2 shows a hierarchy of stream orders in the drainage network of Mewar. It reveals that the streams have gone up

16. Strahler, A.N. (1969) - Physical Geography. 3rd Ed. revised. pp. 482.

M E W A R
Ordering Of Streams

Drainage Basins

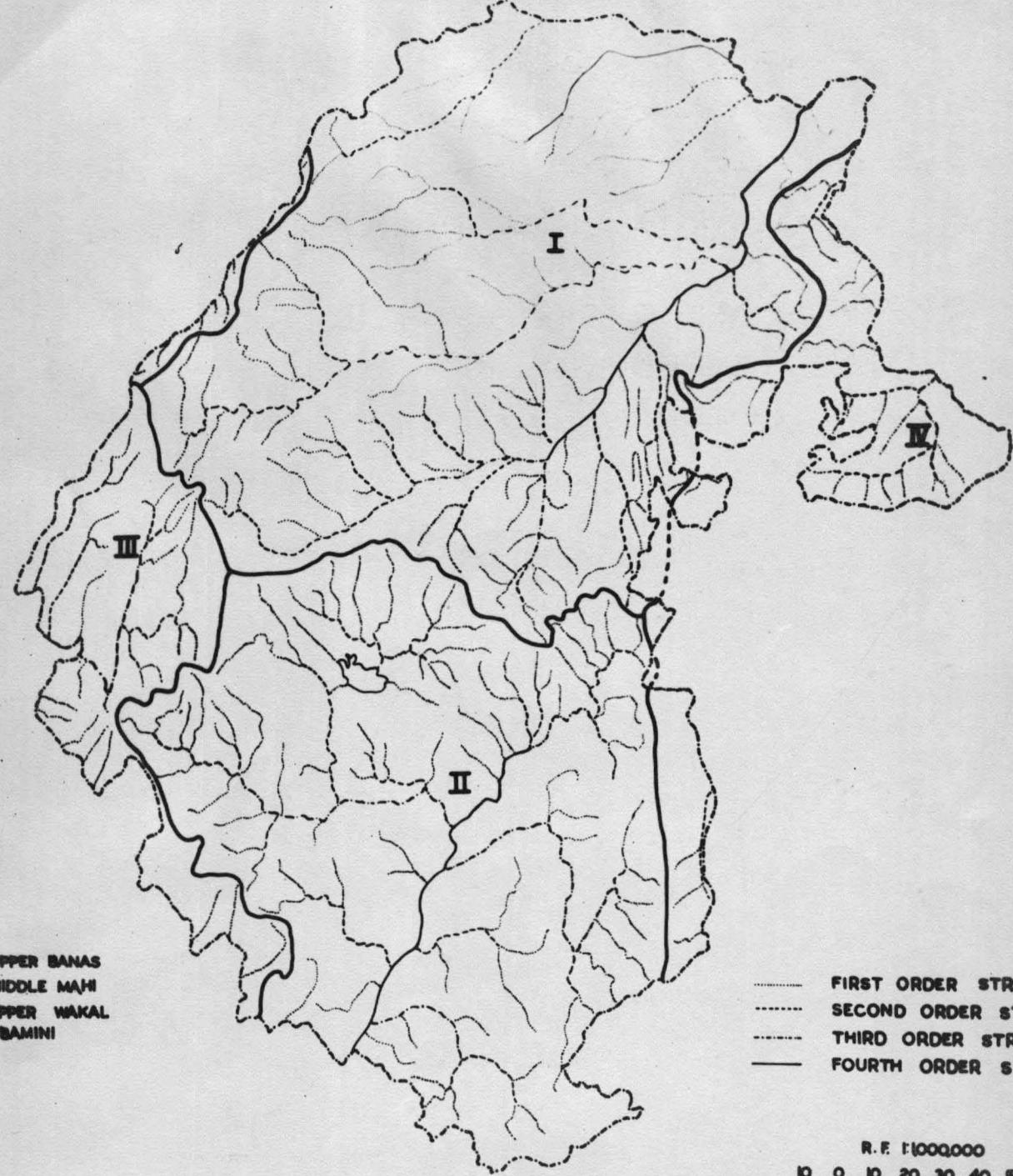


FIG. 3'2

to only fourth order.¹⁷ The ordering has been made separately by Basin wise. In upper Banas Basin 97 segments have been counted as first order, 18 in second order, 21 in third order and one in fourth order. It shows that numbers have gone down as order increases. In case of upper Mahi Basin,¹⁸ the first order segments counted 83, which is about 77.57 per cent to the total segments. Second (18), their (5) and fourth (1) orders are about 16.63, 4.67 and .93 percent respectively. Champal, Wakal and Luni form small basins within Mewar in comparison to Banas and Mahi Basin (Table 3.1). The total number of segements in upper Banas Basin, upper Mahi Basin, Wakal and Bhamini counting all orders are found to be about 120, 107 32 and 33 respectively. The first order segments counts 80.84% in Wakal and 81.82% in Bhamini. It indicates that first order streams are dominant in each river basin and shows a rudimentary nature of the streams due to the topography of Mewar. The second order stream frequency im each basin accounts for about 150, 16.63, 18.75 and 15.15 percent respecti- vely. The third and fourth streams constituting very low frequency are performing their insignificant role. The fourth order stream within the region appears as a master stream of the particular basin.

-
17. Each finger tip channel is designated as a segment of first order. At the junction of any two first order seg- ments a channel of second order is produced and extends down to the point where it joins another second order channel, where upon a segment of third order results and so fourth. But when a low order stream joins the higher rank the former stream will remain unchanged. Strahler, A.N. pp.483
 18. Excluding the part of the river, which is in Madhya Pradesh.

Table 3.1
Results of Stream Order Analysis

River Basin	Stream Order	No. of Segments	Percentage of total Segments
Upper Banas	I	97	80.84
	II	18	15.00
	III	4	3.33
	IV	1	.83
Total		120	100.0
Upper Mahi	I	83	77.57
	II	18	16.63
	III	5	4.67
	IV	1	.93
Total		107	100.0
Wakal	I	25	78.13
	II	6	18.75
	III	1	3.12
	IV	-	-
Total		32	100.0
Chambal	I	27	81.82
	II	5	15.15
	III	1	3.03
	IV	-	-
Total		33	100.0

The predominance of first order streams indicates their tiny size, occurrence in the headwater region and also comparatively rugged topography apart from their short course, non-perenniality and also scanty rainfall in the source region.

Bifercation Ratio¹⁹:

The second step of their analysis is to compute the Bifercation Ratio, between the successive orders of the segments. This technique is generally used for rank analysis of the streams when rank/order is coupled with frequency analysis in reverse order.

Table 3.2 shows the results of all internal basins of Mewar and reveals a general principle that in a region of uniform climate, rock type and stages of development, the bifercation ratio tend to remain constant from one order to another. It indicates that the average bifercation ratio of upper Banas, upper Mahi, Wakal and Bhamini are 4.67, 4.40, 5.09 and 5.20 respectively. It is by and large equal if we consider all orders of streams.²⁰

Stream Length :

In case of length analysis, total length, mean length, cumulative length and length ratio in each order in each Basin

19. The Bifercation ratio is $R_b = \frac{N_u}{N_{u+1}}$

Where = N_u = Number of segments of a given order 'u' and
 N_{u+1} = Number of segments of the next higher order.

R_b = denotes the ratio between the number of segments of a given order (N_u) and that of the next higher order (N_{u+1}) Strahler, A.N. pp.484.

20. It is to be noted that the analysis has been made on the Million Sheet that is why nature of results is in generalised form. For a micro-level study, quarter inch map is most useful.

Table 3.2
Results of Stream Analysis

Stream Order	No. of Segments "Nu"	Bifercation Ratio "Rb"	Mean Length of Stream in Miles Lu	Cummu-lative mean length	Rlength Rl	River Basin
I	97	5.38	9.73	9.73	2.19	
II	18	4.50	21.33	31.06	2.25	Upper Banas
III	4	4.0	48.0	79.06	2.00	
IV	1	-	96.0	175.06		
<u>Total or Mean</u>	120.	4.67	13.46	175.06	2.88	
I	83	4.61	9.44	9.44	1.22	
II	18	3.60	11.55	20.99	2.77	Middle Mahi
III	5	4.0	32.0	52.99	2.50	
IV	1	-	8.0	132.99		
<u>Total or Mean</u>	107	4.40	11.51	132.99	2.61	
I	25	4.17	8.96	8.96	1.49	
II	6	6.0	13.33	22.29	1.25	Wakal
III	1	-	32.00	54.29		
<u>Total or Mean</u>	32	5.09	10.50	54.29	2.06	
I	27	5.40	8.29	8.29	1.54	
II	5	5.0	12.80	21.09	1.25	Chambal
III	1	-	16.0	37.09		
<u>Total or Mean</u>	33	5.20	9.21	37.09	1.77	

have been measured (Table 3.2). It shows that the mean length of segments in each order increases as the order becomes higher. The mean lengths in upper Banas Basin in first and second order are 9.73 and 21.33 miles while the third and fourth order counted 48.0 and 96.0 miles. It shows that higher order streams have capacity to influence much larger area. The mean length ratio²¹ has been computed like bifercation ratio. The values in various orders in each basin have significant variation from mean. The mean length ratio of Upper Banas is 2.88 and in the same manner Upper Mahi's 2.61, Wakal 2.06 and Chambal has 1.77. The maximum length ratio has been measured in the second order segments of Mahi basin and minimum 1.22 in the first order of the same basin indicating its middle course unlike Banas.

Inspite of it, the total length of all segments in each order in each basin decreases as the order increases. The first order segments constitute nearly 58.41 percent in Upper Banas, 63.63 percent in Upper Mahi, 66.67 percent in Wakal and 73.68 percent in Chambal. It is due to their seasonal character which is the function of their monsoonal precipitation. In case of second and third order streams, they also followed the same tendency (Table 3.3). Now the highest (fourth) order constitutes about 5.95 percent in Upper Banas, 6.50 percent in Mahi,

21. Mean length ratio i.e. $R_l = \frac{I_u}{I_{u+1}}$

Where = I_u , is a mean length of all segments of order 'u'
Thus = $I_u = \frac{L_u}{N_u}$

Where = I_u = Total length of all segments in order 'u'
 N_u = No. of segments in respective order. Strahler, pp.486.

Table 3.3.
Stream Length Analysis

River Basin	Stream Order "u"	Total length of all Seg- ments Lu (miles)	%age of total length of the segments of all order Lu
Upper Banas	I	944	58.41
	II	384	23.76
	III	192	11.88
	IV	96	5.95
Total		1616	100.0
Upper Mahi	I	784	63.63
	II	208	16.88
	III	160	12.99
	IV	80	6.50
Total		304	100.0
Wakal	I	224	66.67
	II	64	23.81
	III	16	9.52
Total		304	100.0
Chambal	I	224	73.68
	II	80	21.05
	III	32	5.26
Total		336	100.0

9.52 percent in Wakal, and 5.26 percent in Bhamini. Only the fourth order streams flow throughout the year in the shape of cannels.

Drainage Density :

The basin-wise drainage density has been found out throughout the Mewar with the help of the formula given below.

$$D = \frac{Lk}{Ak}$$

Where D = Drainage density per sq. km.

Lk = Total length of all segments of all order.

Ak = Total area of the basin.

The basin wise area and total length of all segments of all order have been measured and found out that highest density is found in Wakal basin (0.21) situated in South western part of the region. Low density is found in Mahi and Bhamini basin about 0.19 per sq. km. and finally slightly low found in Upper Banas basin, 0.18 and table given below:

Table 3.4
Drainage Density

S.No.	River Basins	Area in Miles ²	Length of all Segments	Density per mile ²
1.	Upper Banas	8540.64	1616	0.18
2.	Upper Mahi	6344.52	1232	0.19
3.	Wakal	1591.11	336	0.21
4.	Chambal	1551.27	304	0.19

The part of Luni basin has been included from the study as it forms only a tiny basin in the study region.

The ordering of streams, drainage density and their frequency distribution are largely influenced by the topographic characteristics and climatic conditions. The prevailing climatic conditions determine the availability of water for surface run off where the topography is hilly and floored by impervious and bare rocks. However, forested areas would react differently.

Climatic Conditions :

The climatic rhythm of any region could be understood best by the analysis of climatic factors and their behaviour over a long period of time. Here in case of Mewar, we have taken climatic data for over a period of 35 to 50 years. The average condition of these elements characterises the climatic pattern. Out of those elements rainfall and its spatial-temporal variation are most important. Next is the temperature condition which determines the water balance for the region.

III (i) The Average Rainfall :

The average annual rainfall in Mewar varies from west to east or most particularly toward south east, and it shows a much variation (below 55 cms.) in the west and (above 105 cms.) in south, southeast. The isohyet lines pass through the region longitudinally making west to east longitudinal strips. The 55 cms. isohyet line within the region covered almost western part of Udaipur district which is physiographically hilly tract of Mewar. It is the southern part of Aravalli region flanking north to south is in the way os south west monsoon and receives

MEWAR Climatic Conditions

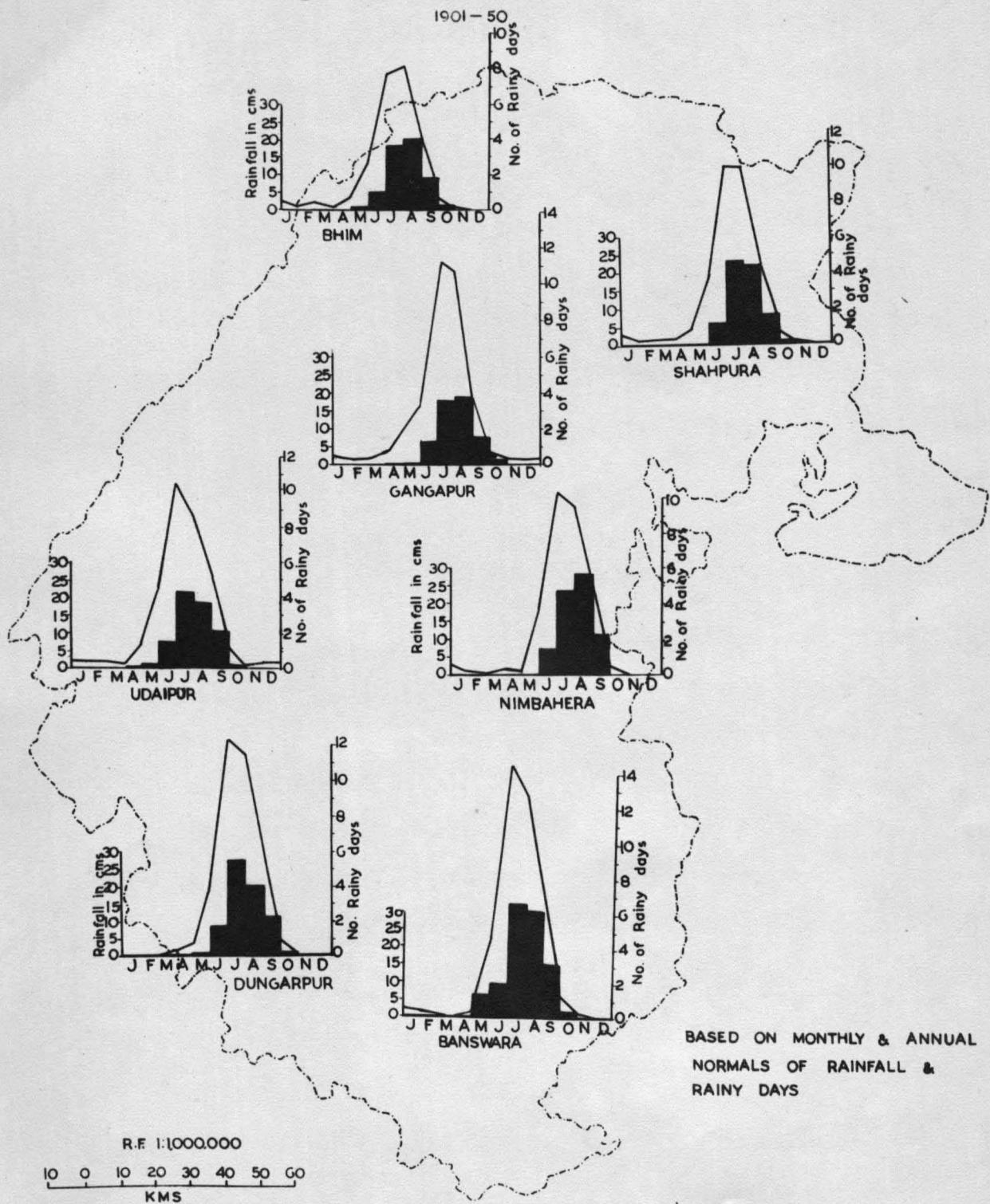


FIG. 3'3

MEWAR Mean Annual Rainfall

BASED UPON THE AVERAGE OF 1935-70

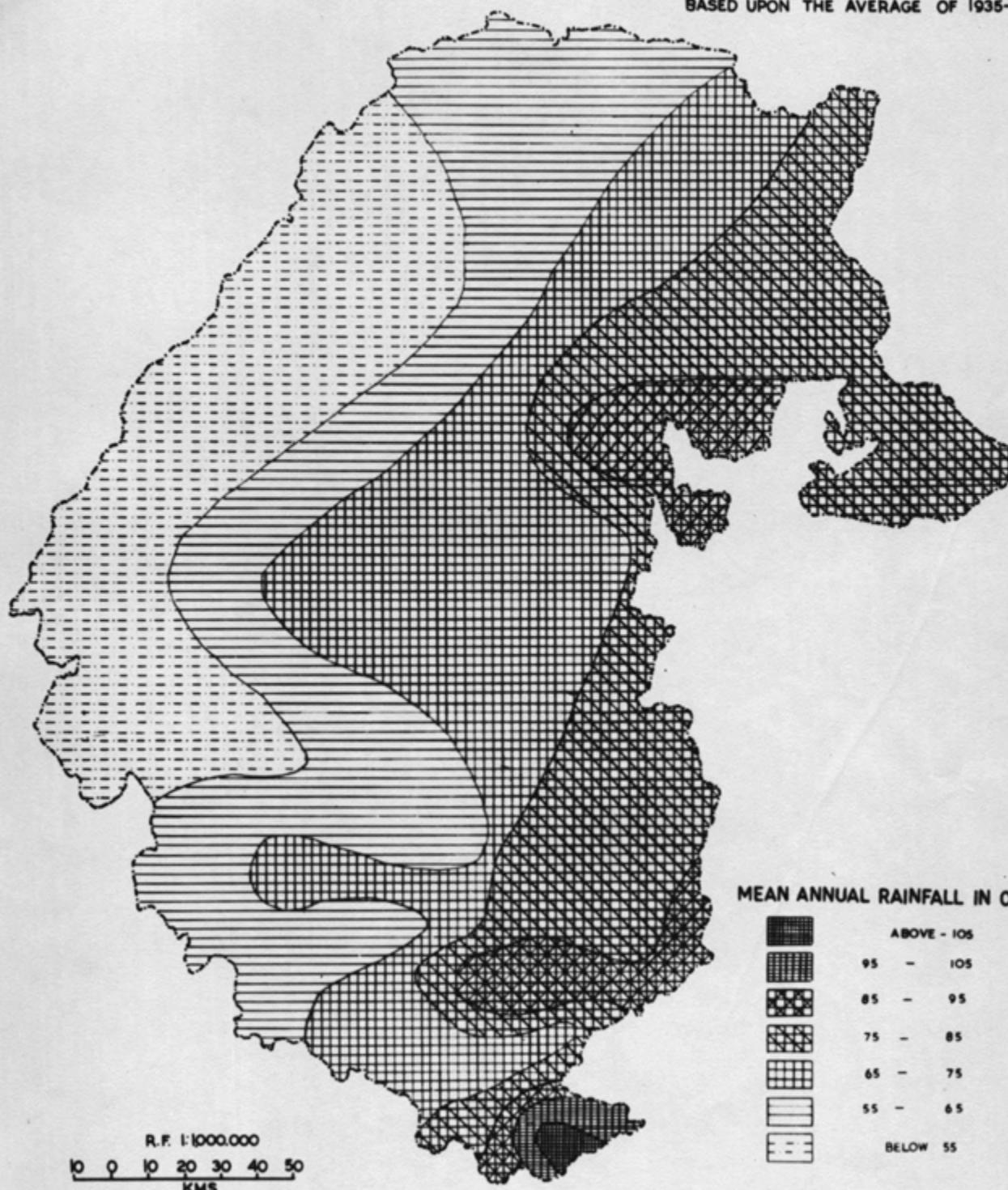


FIG. 3'4

maximum rainfall (Fig. 3.3). Beyond Aravalli toward west the tendency of rainfall is to decrease drastically although it is not a great climatic barrier. The major rainfall recording stations are Gangapur (55 cms.), Bhim (55.93), Sarara (57.15), Dhambola (63.23), Sagwara (60.56), Nithawa (59.44), Kherwara (62.50), Shahpura (65.98), Bhilwara (68.81), Nimbahera (73.57), Kapasan (70.09), Udaipur (65.15), Shergarh (68.51), Khandu (74.56), Arthuna (72.77), Loharia (66.82), Dungapur (67.30) etc. The zonal pattern of average annual rainfall is shown in Fig. 3.4. The wide belt receiving rainfall between 75 to 85 cms, covers eastern part of the region from north to south. The belts swing toward west in the southeastern most part of the region is in central Mahi basin where the monsoonal influence of the Arabian Sea most is felt intensely. The north-east, Southwest alignment of the Aravalli otherwise follows the east to west zonal rainfall pattern.

(2) Average Annual Number of Rainydays :

The choropleth map (Fig. 3.5) shows the spatial variation in the distribution of average annual number of rainy days having an interval of five days at each station. The highest number of rainy days (above 41) are observed in Kushalgarh (43.11) and Partapgarh (40.62) tehsil. While lowest (below 25 days) observed at Sarara (24.5) and at Rajsamand (23.37). The average number of rainydays map shows almost identical pattern as that of average annual rainfall. The superim position of these two maps bring out the picture of regional variation in rainfall intensity.

M E W A R
Average No. Of Rainy Days
ANNUAL

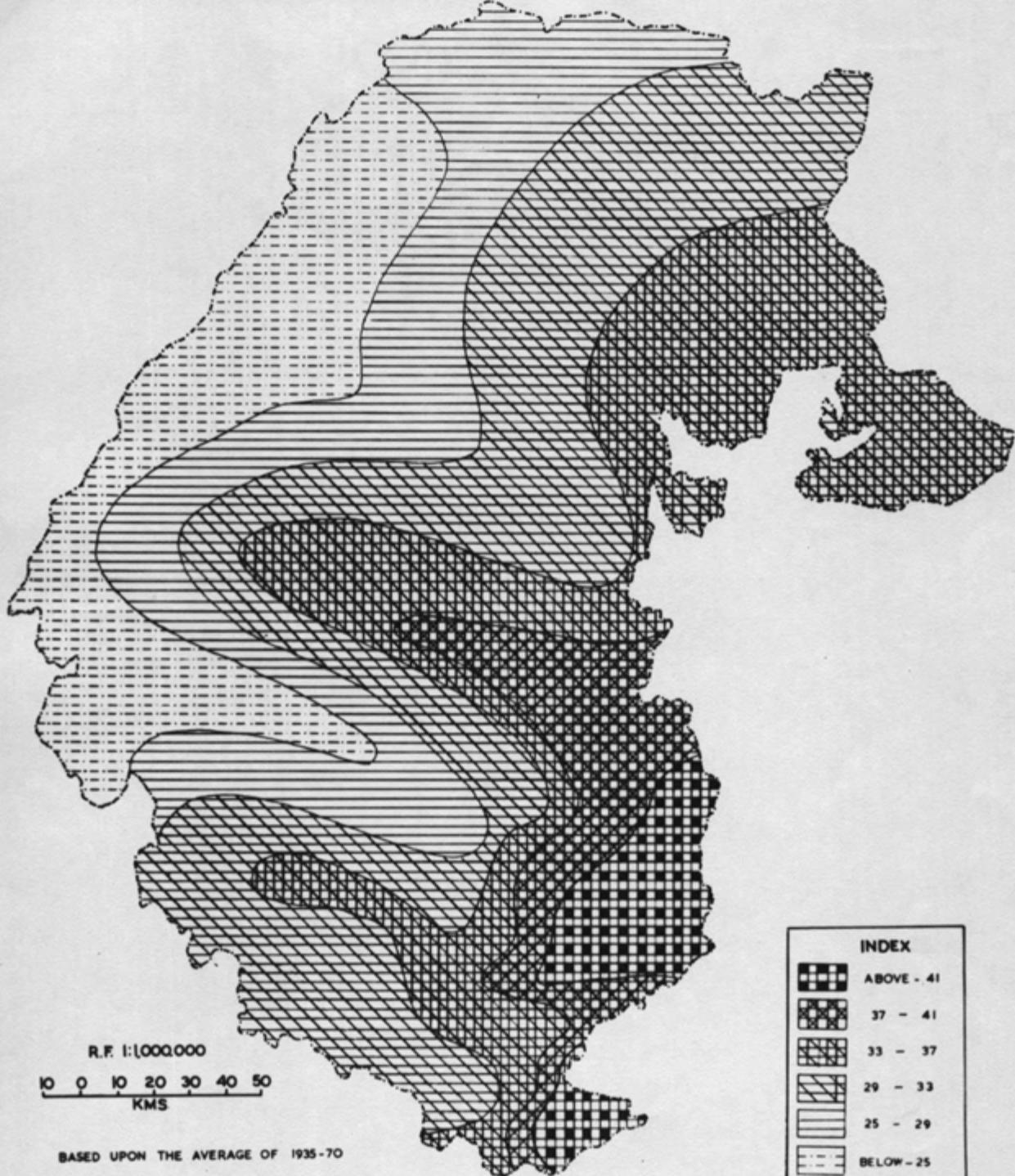


FIG. 3'5

Table 3.5
Climatic Conditions in Mewar
Rainfall and Number of Rainy Days
(Annual Average)

S.No.	Dist/Stations	Average Annual Rain-fall in Cms. X	Average Annual no. of rainy days Y	Intensity of Rainfall in Cms.
(1) <u>BHILWARA</u>				
1.	Bhilwara	68.81	31.23	2.20
2.	Shahpura	65.98	30.81	2.14
3.	Jahazpur	77.24	30.94	2.50
4.	Gangapur	55.00	29.64	1.86
(2) <u>CHITTORGARH</u>				
1.	Chittorgarh	86.91	33.35	2.61
2.	Kapasan	70.09	29.00	2.42
3.	Nimbahera	73.57	31.62	2.33
4.	Partapgarh	80.04	40.62	1.97
(3) <u>UDAIPUR</u>				
1.	Udaipur	65.15	35.43	1.84
2.	Rajsamand	48.88	23.37	2.09
3.	Bhim	55.93	25.22	2.22
4.	Kherwara	62.50	30.25	2.06
5.	Sarana	57.15	24.25	2.33
(4) <u>BANSWARA</u>				
1.	Banswara	99.02	40.82	2.42
2.	Garhi	81.14	34.28	2.33
3.	Kushalgarn	108.55	43.11	2.46

contd..Table 3.5

4.	Bhangra	52.75	35.17	1.49
5.	Khamera	78.87	40.86	1.93
6.	Danpura	86.55	40.06	2.16
7.	Shergarh	68.51	31.32	2.18
8.	Khandu	74.56	35.71	2.08
9.	Arthuna	72.77	32.93	2.20
10.	Loharia	66.82	31.68	2.10
11.	Jagpura	77.06	35.32	2.18
12.	Sallopat	78.44	33.09	2.37
13.	Sajjangarh	81.69	27.71	2.94

(5) DUNGARPUR

1.	Dungarpur	67.30	34.08	1.97
2.	Sagwara	60.56	32.48	1.86
3.	Dhambola	63.29	29.11	2.17
4.	Nithawa	59.44	27.76	2.14

Source: --

(3) Intensity of Rainfall :

To understand the relative availability of rainfall per rainyday, the intensity of rainfall is a prominent meteorological index which also gives a measure of the nature of surface run-off in a region.

$$\text{Average intensity of rainfall} = \frac{\text{Average annual rainfall}}{\text{Average number of rainydays.}}$$

The Fig. 3.6 reveals that lowest intensity is measured in the south western part of Udaipur district and gradually increases toward south east and north east. The lowest intensity recorded at Bhungra (1.49), Udaipur (1.84), Gangapur (1.86) and at Sagwara (1.86). The zone where intensity ranging from 1.9 to 2.1 is a widest part of the region. It covers almost Udaipur district, except Bhim, Railmagra, Mavali, Sarada, Salumber, and Lasadia tehsils, Dungarpur and Aspur tehsils of Dungarpur district and Partapgarh tehsil of Chittorgarh district.

In the extreme north eastern and southern part of the region high intensity (ranging 2.5 to 2.7) covers part of Jahazpur, Begun, Mandalgarh, Gangrar, Chittorgarh, tehsils and part of Banswara, Bagidora, and Garhi tehsils. with highest intensity in Banswara district where rainfall is also highest. There is a significant correlation (0.73) between the average annual rainfall and the average number of rainy days in a year when calculated station to station so the regional pattern of rainfall intensity as depicted in Fig. 3.6 could safely be established.

Mewar Intensity Of Rainfall

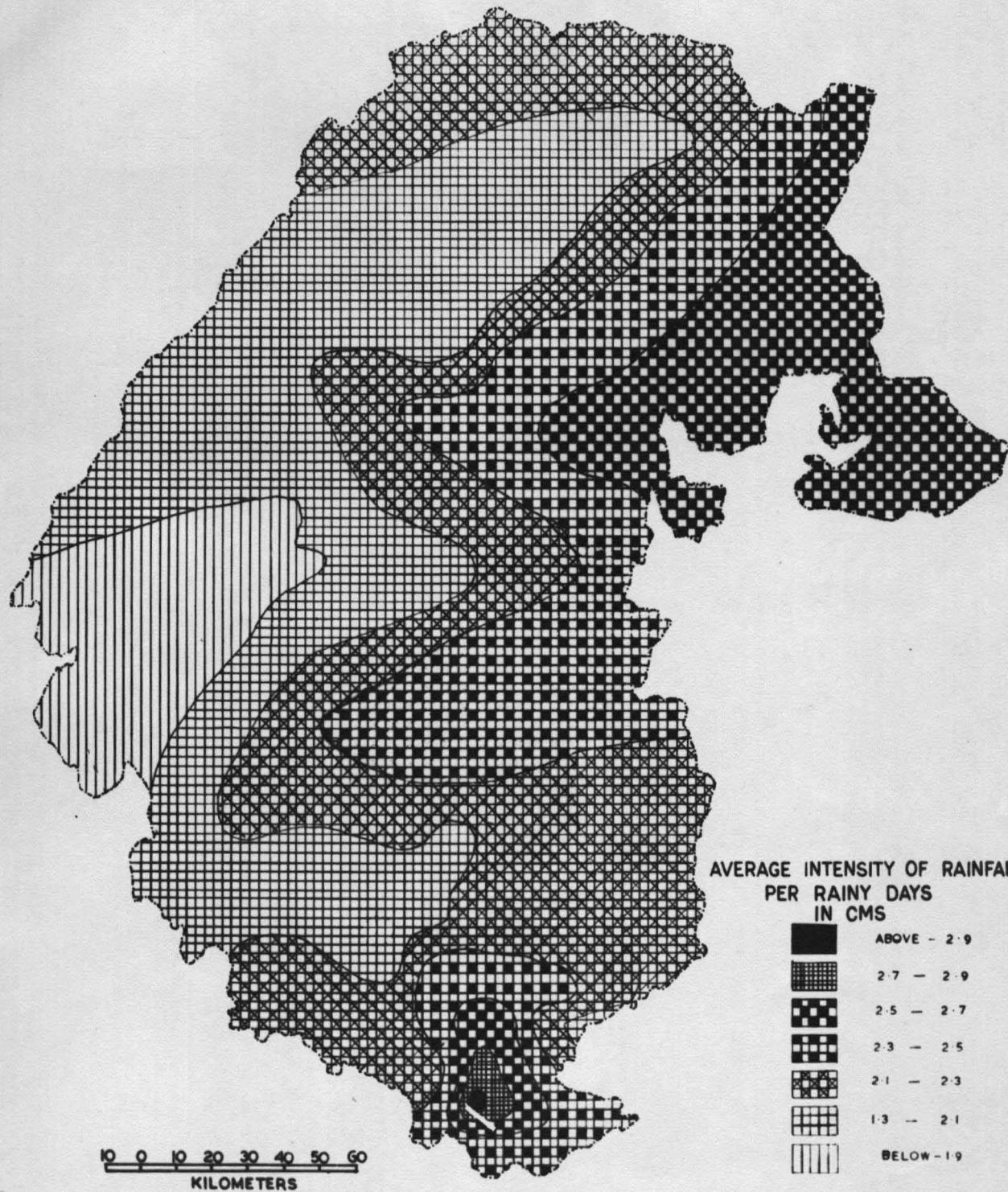


FIG. 3·6

(4) Variability of Summer Monsoon :

The variability²² of rainfall has been measured only for rainy season, because the region gets rainfall particularly by south west monsoon in summer months. The variability has its importance to understand the agricultural problems. It affects the sowing of Kharif crops and its harvest; besides it also affects the sowing of Rabi crops. The variability observed for the five representative stations namely in the north Shahpura, in the south Dungarpur and Banswara, in the east by Partapgarh, and west by Udaipur.

The Fig. 3.7 reveals that the trend of variability of each station has similar pattern. The month in which rainfall is high the variability is low.

This variability measure is although an established phenomenon in India climate, its application to a region of low to moderate rainfall has a great significance particularly in determining the cropping pattern. Monthly variation more particularly during the rainy season is very significant. See also table . The highest variability is measured in October at Partapgarh (160.68%), Dungarpur (226.41%), Banswara (215.46%), Udaipur(189.78%) and at Shahpura (181.81%). The lowest variability recorded in the month of July at Udaipur (50.44%), Shahpura (53.13%), Partapgarh (48.72%), Dungarpur (68.44%) and at Banswara (48.08%).

$$22. \text{ Variability} = \frac{\sum d_i^2}{\bar{x}} \times 100.$$

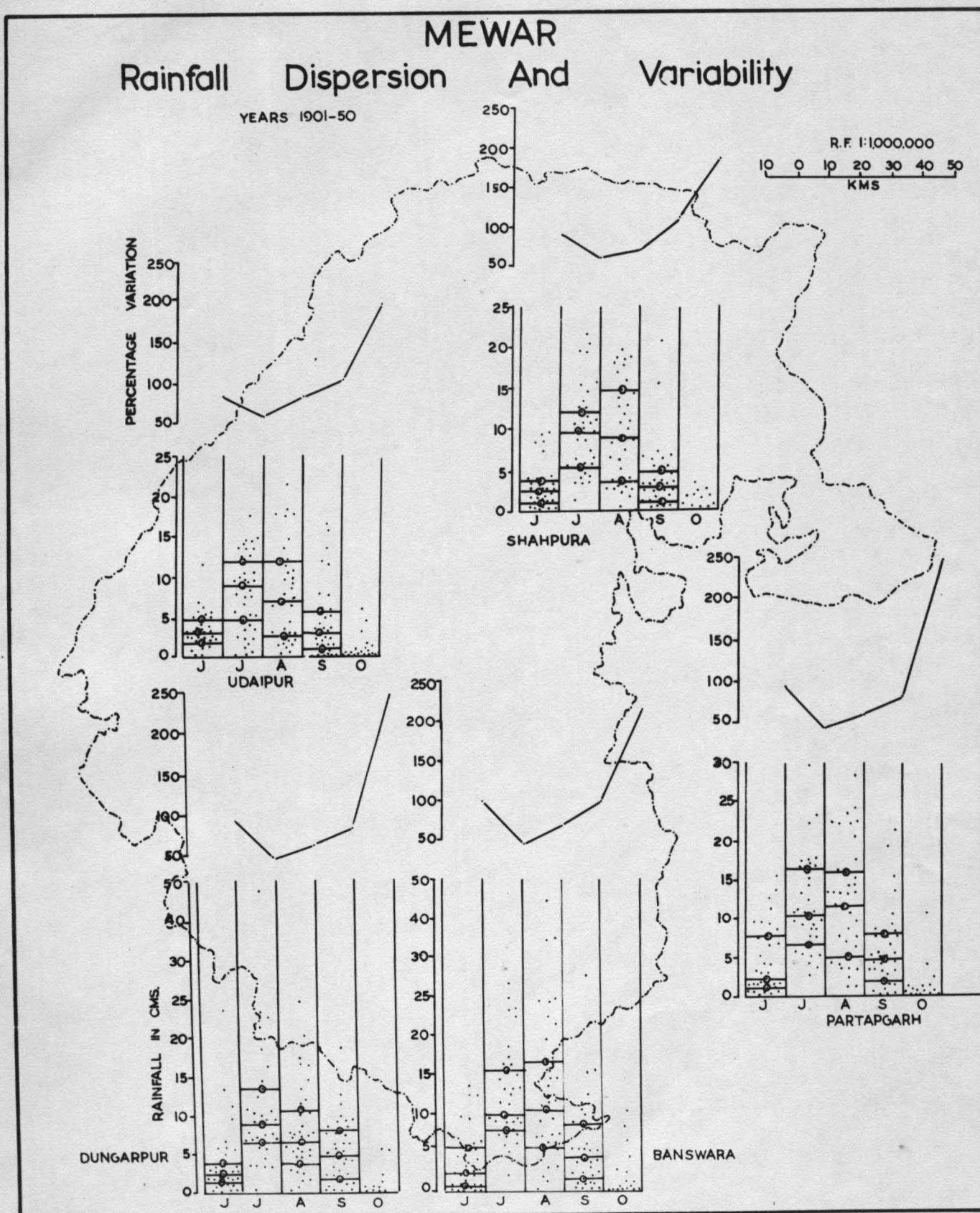


FIG. 3.7

Table 3.6
Monthly Variability of Rainfall over 50
years

S.No.	Stations	June	July	August	September	October
(1)	<u>UDAIPUR</u>					
	Mean (\bar{x})	3.06	8.42	7.99	4.45	.78
	S.D.	2.33	4.25	5.82	4.41	.93
	C.V. in %	76.14	50.44	72.83	96.85	189.78
(2)	<u>SHAH PURA</u>					
	\bar{x}	2.87	9.58	9.55	3.65	.44
		2.49	5.09	6.01	3.99	.80
	C.V. in %	86.75	53.13	62.93	109.31	181.81
(3)	<u>PARTAP GARGH</u>					
	\bar{x}	4.62	11.80	12.11	6.02	.73
		4.31	5.75	7.30	4.97	1.83
	C.V. in %	93.29	48.72	60.28	82.55	260.68
(4)	<u>DUNGARPUR</u>					
	\bar{x}	3.77	11.09	8.07	5.33	.53
		4.58	7.59	5.68	4.07	1.220
	C.V. in %	121.48	68.44	70.38	76.36	226.41
(5)	<u>BANSWARA</u>					
	\bar{x}	3.84	12.56	13.16	6.17	.97
		3.72	6.04	9.13	5.59	2.05
	C.V. in %	96.87	48.08	69.37	90.59	215.46

The variability at each station varies from month to month but the tendency of curve shows gradual increase from July to October. The greater the variability, the greater is the risk involved in agriculture and greater is the uncertainty in cropping success.

(5) Dispersion of Rainfall :

The rainfall variability and reliability are the two most important agro-climatic factors in Indian agriculture. The dispersion of rainfall shows the range of its fluctuation within the respective month. This dispersion shows not only the year-to-year rainfall variation but in effect determines the weather cycle if any in the region or continuity or reliability of the rainfall. Fig. 3.7 reveals the discontinuity of highest (third) order at all stations from June to October. The region receives highest rainfall in July and August. We find gradual decrease in second and first order from August to October. The highest dispersed conditions from one centimetre to thirty seven centimetres observed at each stations in July and August. Thus, such conditions show the great uncertainty of rainfall which is harmful to agriculture.

Temperature :

Since the data are not available for temperature for all the above mentioned stations except for Udaipur observatory the analysis has been made for the triangle enclosing

Table 3.7
Climatic Conditions in Mewar
(Temperature* & Humidity⁺)

<u>Stations</u> T.& H.	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov	Dec.	Annual total No. of years or Me- an
AJMER	1* 22.2	25.3	30.7	39.9	39.5	38.1	33.2	30.9	32.1	32.9	28.9	24.4	31.53 80
	2* 7.3	9.9	15.7	21.9	27.3	27.7	25.6	24.3	23.7	17.8	10.9	7.7	18.40 80
	3* 14.75	17.6	23.7	30.9	33.4	32.9	29.4	27.6	27.9	25.35	19.9	16.05	24.96 80
	4* 50.5	39.0	30.0	24.0	29.5	45.0	67.0	73.0	61.5	40.5	41.0	47.5	45.7 30
KOTA	1* 19.3	21.2	25.3	29.4	31.5	29.1	24.3	22.5	24.1	26.6	24.1	21.2	24.9 30
	2* 9.3	11.5	15.9	20.0	22.3	20.5	19.3	18.3	18.4	17.4	13.5	11.2	16.5 30
	3* 17.55	20.8	26.30	31.7	36.15	34.9	29.85	28.55	28.9	27.75	22.8	19.0	27.02 30
	4* 49.0	25.62	26.0	18.15	22.0	23.67	69.59	10.0	65.5	43.5	40.0	48.0	42.16 30
DEESA	1* 27.8	32.1	35.5	39.2	41.3	38.9	33.4	32.2	33.0	35.7	33.1	29.8	34.3 10
	2* 10.4	12.2	17.3	21.6	25.8	27.2	25.5	24.5	23.5	19.3	14.0	11.1	19.4 10
	3* 19.10	22.15	26.4	30.4	33.55	33.05	29.45	28.35	28.25	27.5	23.55	20.45	26.85 10
	4* 44.0	35.0	35.5	23.10	42.0	57.50	75.0	78.5	67.5	47.5	39.0	42.5	48.92 10

contd.....

contd. table 3.7

UDAIPUR	1*	24.29	27.6	32.3	36.0	38.6	35.9	30.7	29.3	30.9	32.0	29.1	26.3	31.1	10
	2*	7.8	9.7	15.1	20.2	24.9	25.3	23.9	22.9	22.1	13.9	11.0	8.3	17.5	10
	3*	16.0	18.65	23.70	28.10	31.75	30.60	27.30	26.10	26.50	25.45	20.05	17.30	24.29	10
	4*	53.00	42.00	33.50	28.50	31.50	55.50	74.00	78.00	70.50	52.00	48.00	51.50	51.50	10
MEWAR	1*	23.10	26.20	30.50	36.16	37.43	35.36	30.30	28.53	29.73	31.73	26.70	25.13	30.24	40
	2*	9.00	11.20	16.30	21.16	25.13	25.13	23.46	22.36	18.16	18.16	12.80	10.00	18.10	40
	3*	17.13	20.48	25.30	31.00	34.36	33.65	29.56	28.16	28.35	26.86	22.08	18.50	26.27	40
	4*	47.83	33.20	30.50	21.75	31.16	42.05	70.5	75.50	64.83	43.83	40.00	46.00	45.59	40

*Temperature in C,

*Humidity in percentage.

1* Maximum

2* Minimum

3* Mean

4* Relative Humidity

the study region formed by Ajmer, Kota and Dusa Stations for which data are available. A temperature index for the region has been derived after compositing the rows of each months for maximum and minimum temperature data and divided them by three. The result shows that maximum temperature ranges from 23.10°C. in January to 37.43°C. in May, and the minimum temperature range from 9.0°C. in Janugary to 25.13°C. in May and June. The mean temperature ranges from 17.13°C. in January to 34.36°C. in May. Thus the tendency of temperature shows gradual increase from January to May and again decreases from July to December. The hottest months of the region are March, April, May, June and July in which temperature recorded above 30°C. and the cold months are December January and February in which temperature recorded below 10°C.

Humidity :

The relative humidity is an atmospheric condition reflects the moisture availability in the air and in a way determines the extent of crop desication. The relative humadity is observed high (above 64 percent) in the rainy season, in the month of July (70.5), August (75.5), and September (64.83) is far from adequate. The normal humidity observed in the winter season particularly from October (43.83) to January 47.83). This physiological condition of the weather both in summer and in winter presents general aridity except in the southwest part of the region. The Udaipur which is only one representative station for which data are available resembles the same results as above. See table

SOILS AND NATURAL VEGETATION

Soils :

This section of the study is mainly based on the field survey and scientific analysis of soil properties by Rajasthan agricultural chemistry section, Durgapura. They divided the soils of Mewar into five major types. The soil types and the area covered by specific soil are as follows (Fig.3.8).

(i) Brown Soil (With saline phase) :

Such type of soil is dominant in the Bhilwara district except in south eastern and north western and the northern part of the region. Due to salinity, the soil has very low proportion of nutrients and characterised by poor fertility.

(ii) Hilly Soil :

It covers almost the western and southern parts of Udaipur district, north eastern part of the Chittorgarh district, and south eastern part of Bhilwara district. The soil has been formed by the elements of weathering and is characterised by its course texture having low resistance to water.

(iii) Yellowish Brown Soil :

This soil group is dominant in central Mewar. It covers the western and southern part of Bhilwara district, eastern part of Udaipur district and north western part of Chittorgarh district. The yellowish colour is due to high degree of hydration. The structure of the soil varies from silty clay to silty loam and even degenerating to sandy. The proportion of humus contents in this soil is very low.

M E W A R

Soils

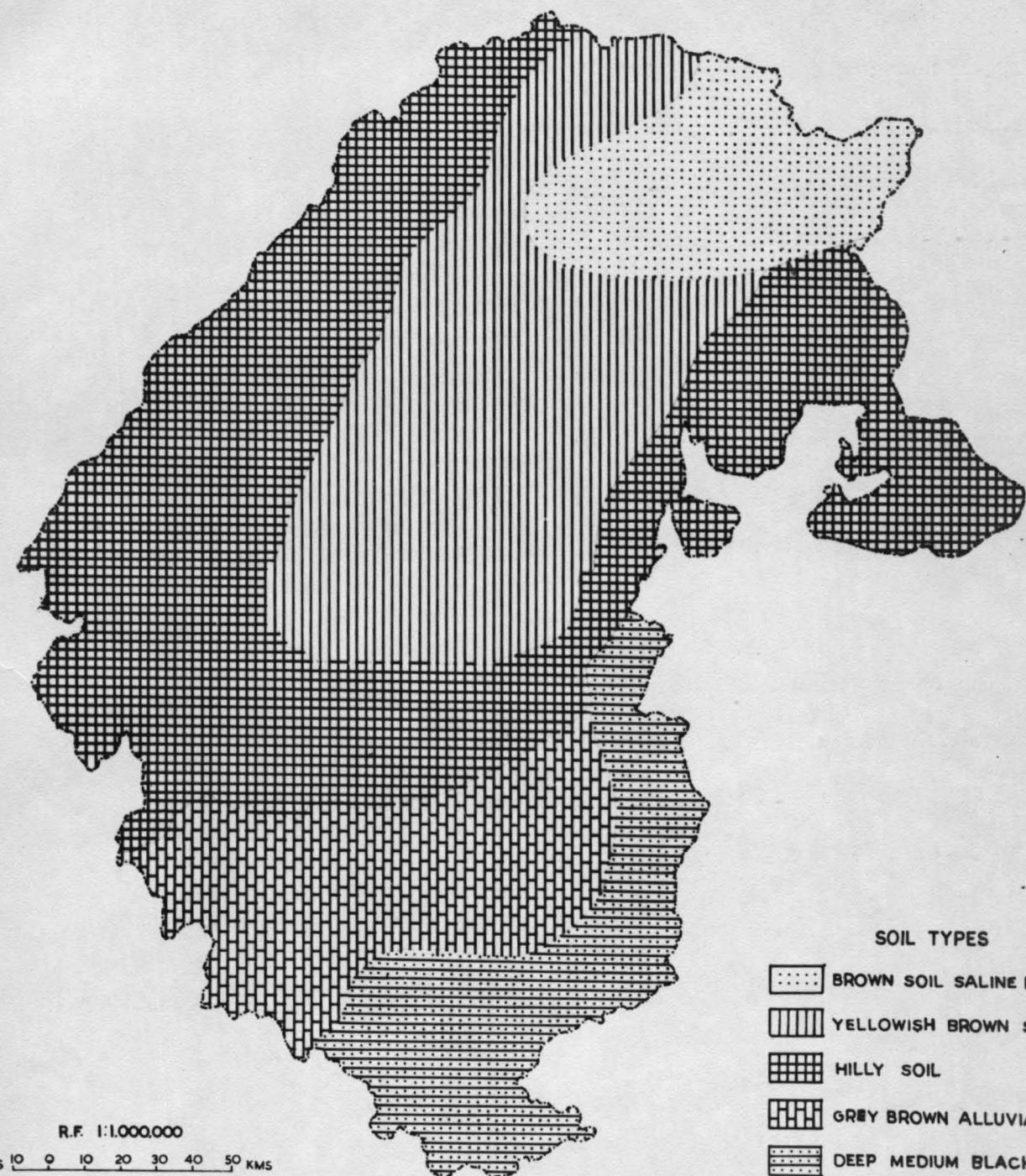


FIG. 3'8

(iv) Gray Brown Soil :

It is particularly found in whole of Dungarpur district and in some part of Udaipur, Chittorgarh and Banswara district. The soil has been formed from ancient crystalline and metamorphic rocks. Normally this soil is poor in nitrogen, phosphorus, and humus. The soil is characterised by lighter texture.

(v) Deep Medium Black Soil :

The soil is dominantly found in Banswara and in the southern part of Chittorgarh district. It is characterised by high productivity usually supporting the luxuriant growth of cash crop. This soil is the extension of the black soil tract of Malwa plateau.

Natural Vegetation :

The flora of Mewar are greater in variety both in herbs and shrubs due to its natural environmental conditions and physiography where plains, plateaus, hills and depressions are common. That is why the succession of plant communities in the variety of their habitat bounds us to note that in Mewar, there are several kinds of mesophytes, hydrophytes, and xerophytes, with their common species are found in the region; besides, there are several open grasslands found here and there. The land use pattern shows that near about 691,200 acres of land is under forests, which covers about 6.33 percent of the total rural land. These figures reveal that there are deficiency of natural vegetation. The various kinds of habitat have some specific type of varieties as described below.

(i) Mesophytes :

The plants which are found in mesic conditions are designated as mesophytes. The mesic conditions can be characterised by normal rainfall and temperature of the surrounding area. By the character of the community which are found there, specifically bounded in term and described :

(a) Tropical dry mixed deciduous forests :

The plants belong to this type are dominantly found in the western and southeastern part of Udaipur district, particularly in Kotra, Phalasia, Gogunda, Kumbhalgarh, Girwa, Sarada and in Salumber tehsils, on high surface ranging from 300 to 1200 metre high. The rainfall in this part is about 35 to 65 cms, which is suitable for such type of plants. The common species belonging to this group are Dhak (*Butiafrondosa*), Salar (*Boswellia Thurifera*), Jamun (*Eugenia Jambolana*), Mahuwa (*Bassia latifolia*), Mango (*Mangifera Indica*), Pipal (*Ficus religiosa*) and Bar (*Ficus Benghalensis*) etc. etc.

(b) Dry teak forest : ○

These forests are commonly found in Chittorgarh, Dungarpur, Banswara and in Udaipur district, Partapgarh and southern part of Choti and Bari Sadri tehsils of Chittorgarh district, and south and eastern part of Banswara district, covering Kushalgarh, Banswara and Ghatol tehsils and the Dungarpur tehsil of Dungarpur district. The forests among these tehsils are found on altitude about 300 to 450 metres. The most dominant species are Teak (*Tectona grandis*) and Sal (*Boswellia Serrata*)

with other species like Bomboo (*Dendrocalamus Strictus*) Bahera (*Trimilia Ballerica*) and Timru (*Diospyros tomentosa*) etc.

(2) Xerophytes :

The plants which can adopt in the scarcity of rainfall and in high temperature are commonly known as xerophytes. The xeric conditions are not prevailing through out the region, that is why, the shrubby plants are found here and there, in patches, mostly beyond Aravallis on the one hand and in Chittorgarh and in Bhilwara district on the other. The common species are Babul (*Acacia Arabica*) Khair (*Acacia catechu*), Khajur (*Phoenix sylvestris*), Khejra (*Prosopis Specigera*), Runjra (*Acacia Laucophloca*). The smaller shrubs consist of like Akra (*Calotropis procera*), Anwal (*Cassia Auriculata*), Kharanda (*Carissa carandas*), Nagdon (*Castus indicus*) and Thor (*Euphorbia neriifolia*) etc.

(3) Hydrophytes :

Actual succession of plant community in various stages is held in ponds, lakes, and in Dams. Among the several dominant hydric species like Trapa, Vallisnaria, Nelumbium, Lemna, are abundantly found in the water bodies of the region.

Besides the above mentioned communities, those plants which could not adopt themselves in the hot and dry areas are commonly found in the higher attitudes of Aravallis. These are the species of Orchids and Ferns like, Rosa Lyelli, Girardinia, Heterophylla, Pongamica, Galabra, Sterculia Colorata, Adintun Caudatum and Lumulatum etc.

GrassLands :

During the rainy season, grass lands are common throughout the region but most particularly, they covered large part of Bhilwara district and limited part of Udaipur, Chittorgarh, Dungarpur and Banswara districts. In the region grass lands are commonly known as Buds, but place to place, they are called by their own specific terms, like Sukali and Samia, these are local terms but broadly they are Buds. The species of grasses which are found in these Buds are variously known by their local name as Gandal, Rohera, Kans, Bru, Dhaman, Sawan, Malicha, Bhutia and Marla etc.

Conclusion :

The physical complex of the Mewar is thus characterised by the hilly terrain except in the extreme south and the north-east where the land is slopy to plain drained by the nonperennial headwater streams. The Aravallis on the west along with the Dungarpur and Partapgarh hills form the "great water divide" of India. Nevertheless the land is characterised by arid to semi-arid landscape with moderately low rainfall holding the agricultural conditions on a precarious balance and is reflected in its agricultural condition.

The human response to this physical environment is largely felt particularly in the distribution and density pattern of population, social conditions and their demographic characteristics. The natural environment as has been analysed above is far from hospitable while historically it has been occupied for long by the descendants of the ancestral groups of same people.

CHAPTER IV

DEMOGRAPHIC AND SOCIAL STRUCTURE

The main purpose of this chapter is to throw some light on the regional characteristics of the demographic and social structure of the Population. The chapter has been divided into two major parts : first part deals with the demographic aspects including growth of population, its density distribution, occupational structure and general demographic characteristics including dependency, sex ratio, literacy and the size of households. Second part deals with the concentration and numerical distribution of scheduled caste and scheduled tribes over the region. The above demographic and social aspects have also been used for regionalisation and identification of sub-regions according to levels of developments in the region.

Section - A

DEMOGRAPHIC STRUCTURE

Generally, the study of demography, is necessary for the assessment of social strata, which are by-products of its several elements. The study of population has been made here to understand the nature and pattern of population distribution in the region. The population census of 1971, has enumerated 4,988,395 persons in which 89.96 percent are rural and 10.04 percent are urban, spread over 47,382 sq. kilometre area of which 98.95 percent are rural and 1.05 percent urban.

Growth of Population :

The table 4.1 shows the growth of population since 1901 upto 1971 in the region. In 1901-11 the population of the region increased by about 25 percent counrary to decline in population in India in general. Since 1901, there has been continuous growth but at modest rate. The population growth has been maintained by natural increase only; there was no significant in-migration to and out-migration from the region. The region behaves like a secluded place where population growth has not been affected until very recently. Its population growth has always been slower than the national rate and it only shows growth in per with the nation during the last decade signifying its inclusion in the mainstream of national population growth.

Table 4.1
Growth of Population (1901-71)

Years	Population	Variation	%age Variation
1901	1475198	-	-
1911	1841660	+366462	+24.84
1921	1998999	+157339	+ 8.54
1931	2306665	+307666	+15.39
1941	2739340	+432675	+18.75
1951	3171114	+431774	+15.76
1961	3922388	+751274	+23.69
1971	4988395	+1066007	+27.17

Source : Census of India 1971, Rajasthan, Part II A.
General Population Tables.

Distribution of Density :

To understand the relative strength of population in various parts of the region, the study of population density¹ is necessary, while on the other hand population density is function of carrying capacity of the land. There are various types of density distribution although ultimately it is the extent of density which matters in relation with other factors influencing such distribution. The calculation of "general population density" requires information on both population and the area associated with the respective population thus the arithmetic density, rural density, urban density, agricultural density, and the carrying capacity of land have been worked out for the purpose on the basis of tehsils. There are the various measures of population load analysis.

(i) Arithmatic Density :

It represents the general pressure of population on the area, worked out regionally to be 105 persons per km², which is about 40 percent higher than the state (75 persons per km²) average although far below the national level. The high density (above 150) found in the southern part of the region mainly in Dungarpur, Sagwara, Garhi and Bagidora tehsils and in the north-western part in Girwa and Bhilwara tehsils. The range (130-150) observed in Rajsamand, Nathdwara, Mavali, Chittorgarh, Aspur and in Banswara tehsils.

-
1. Definition:- "The number of Persons per unit of area in that place" or "The number of persons per unit of housing space in that place" or "Population Potential". David, M. Heer: (1969) Society and Population.

MEWAR
General Density Of Population
DATA BASED UPON CENSUS 1971.

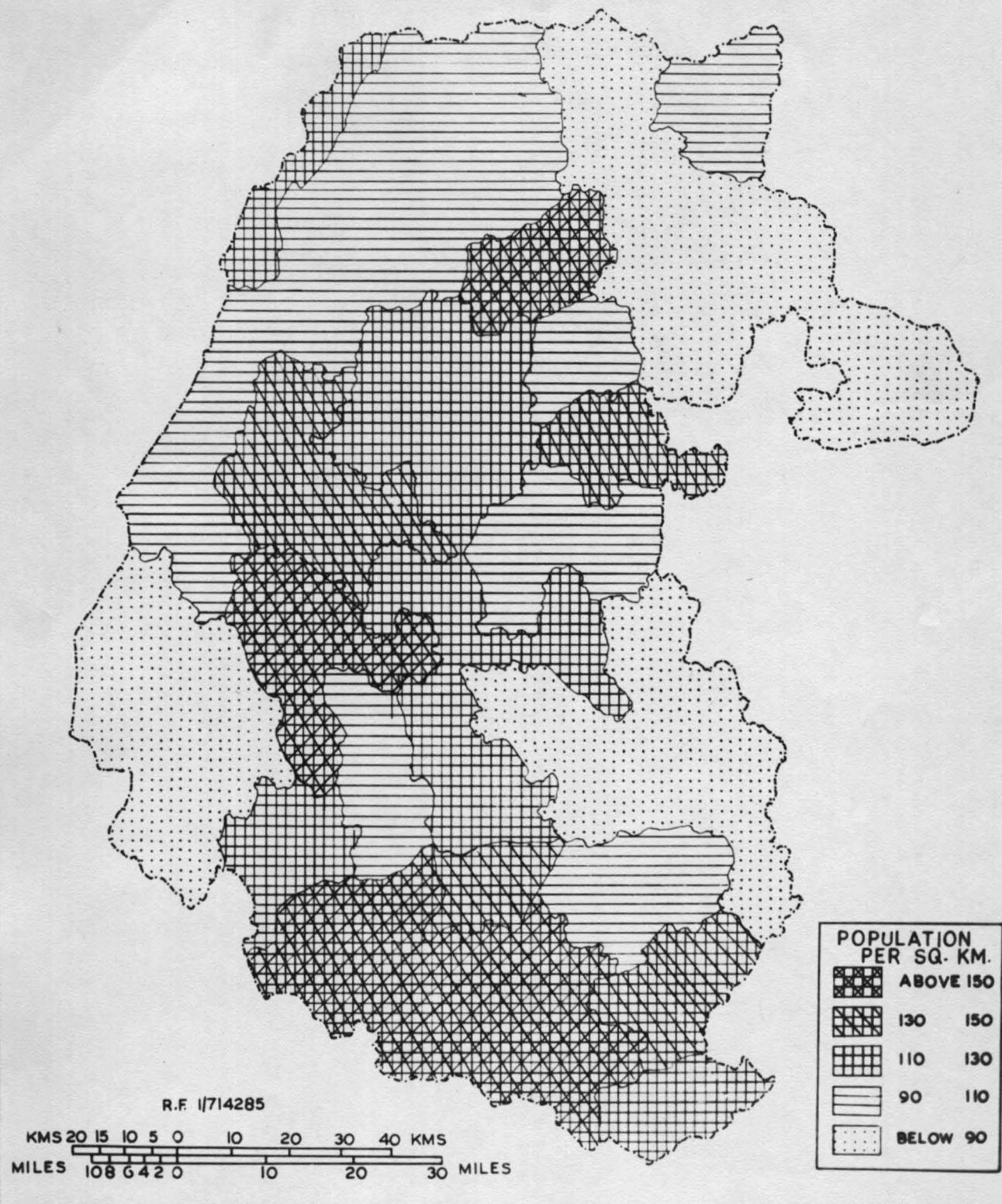


FIG. 4'

The remaining tehsils having low density are spread over north western, western eastern and north eastern part of the region. The lowest density of population (below 90) is found in Kotra, Phalasia Lasadia, Kotri, Mandalgarh, Choti Sadri, Partapgarh and in Shahpura tehsils.

It is clear from the above that the high density is found in south(max. 186) and low in north east (min. 53); the variation between high and low density is very wide (133). The low density areas are either inaccessible in terms of communication and transport or agriculturally very backward and represent the concentration of tribal communities (Fig. 4.1).

(ii) Rural Density :

Rural density has been observed highest (above 130%) in the southern part of the region comprising Dungarpur district as a whole, Bagidora and Garhi tehsils of Banswara district and in Mavali tehsil of the Udaipur district. High range (110-130) found in south as well as in the central part of the region covering Banswara, Kushalgarh, Kapasan, Rasmi, Kherwara, Vallabhnagar, Nathdwara, Railmagra, Rajsamand and Bhim tehsils. The range (90-110) makes a strip, observed in the western part of Bhilwara district and then continuous toward western part of the region through Kumbhalgarh and Gogunda tehsils, and then the strip turned toward Girwa, Sarada, Salumber, and to Garhi tehsils, another small strip

Mewar
Density Of Rural Population

DATA BASED UPON CENSUS 1971

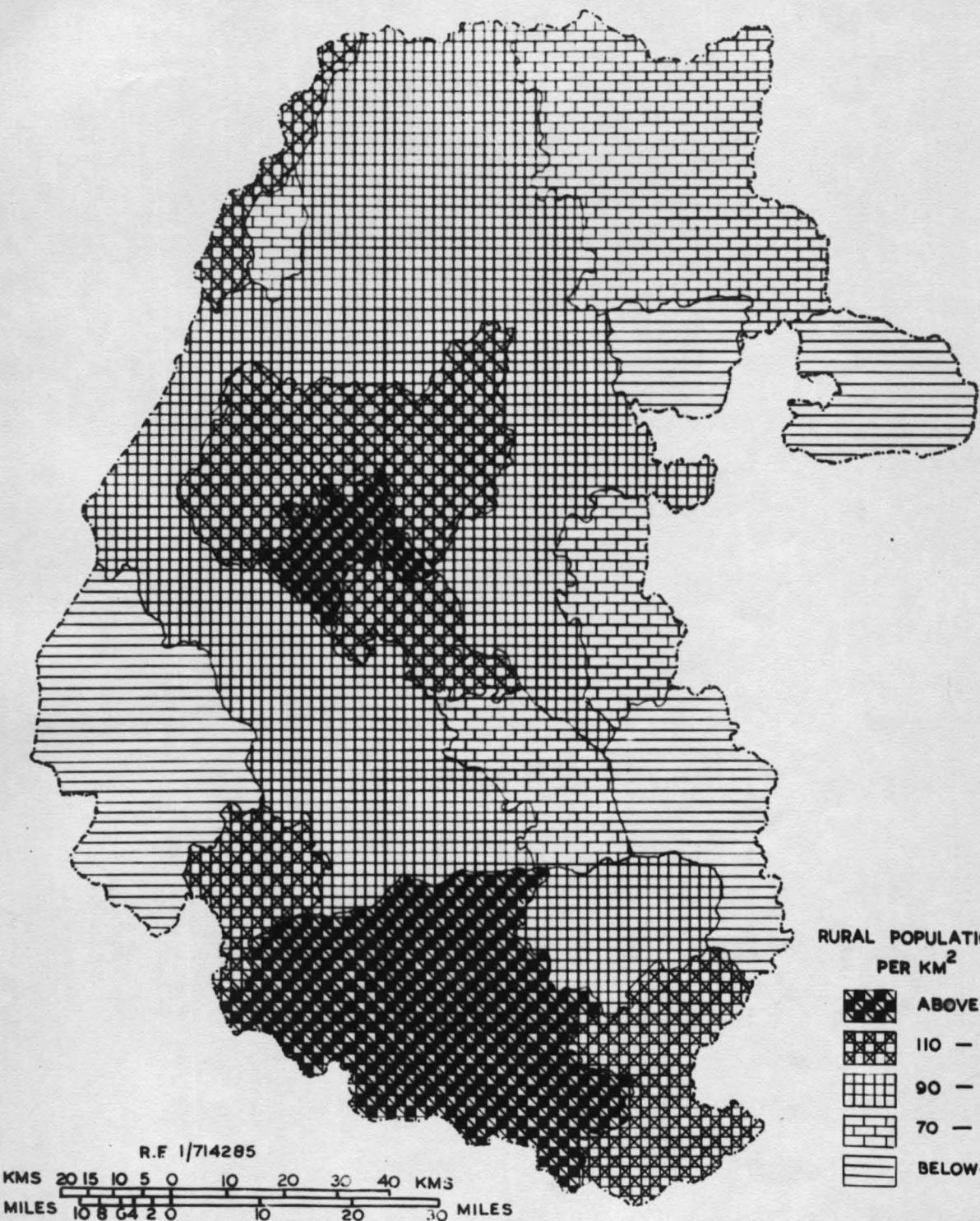


FIG. 4'2

came through Gangrar, Chittorgarh, Bhadesar, Dungla and Bari Sadri tehsils. The low and very low rural density (range 70 to 90 and below 70) found in south eastern and north eastern part of the region. In a predominantly rural area like Mewar, it is expected that the arithmetic density would follow the same pattern as that of rural density but rural density variation is more regular than the arithmetic one simply because of existence of a few large urban centres which have affected the arithmetic density.

(iii) Urban Density :

Persons per km.² of urban land has been calculated for the purpose for the towns. The urban density is very low compared to other parts of India but with respect to low rural density it is quite high in Dungarpur, Kushalgarh and in Udaipur (2000); while it is lower than 2000 in Shahpura, Salumber, Rajsamand, Begun, Nathdwara, Ninbahera, Partapgarh and in Banswara. The low and very low density (about 500-1000) and below 500 persons per km.² identified in the northern urban areas comprising Bhilwara, Gangapur, Jahazpur, Deogarh, Kapasan, (Bhinder), Choti Sadri, Bari Sadri and at Sagwara. The highest urban density is found in Dungarpur (max. 3368 persons per km.²) and lowest in (min. 362) Deogarh. It shows a very wide range in the concentration of urban population although the urban places are very small in size. None of the above density distribution figures go beyond numerical meaning.

(iv) Agricultural Density :

It is essential to study the man-land ratio or agricultural density which represents actual pressure of agricultural population on the cultivated land. This could be used as an index for measuring the carrying capacity of land. Fig. 4.3a shows the various patterns of cultivated land per capita. The statistical information shows a very irregular distribution pattern of the agricultural density. It is high (above 1.2 persons per hect.²) in Shahpura, Bhilwara, Ganrar, Kotri, Bhim, Deogarh, and at Kumbhalgarh tehsils, making a small strip in the northern part of the region, besides it, low agricultural density observed in (below 75) south and southeastern part covering Banswara, Ghatol, Bagidora, Partapgarh, Nimbahera, Kumbhalgarh and Rasmi tehsils. The remaining part of the region shows moderate nature of the distribution pattern. However, the population load is a relative term and its extent is very much dependent on the carrying capacity of the land.

(v) Carrying Capacity :

It has been measured as a pressure of persons per hect.² on cultivated land. Higher carrying capacity measured whereby and larg agricultural density is high and vis-versa. There are slight differences between carrying capacity and agricultural density. The former recognised as a pressure of total population on cultivated land or per unit cultivated land associated with the total population of the particular unit, and latter shows the pressure of agricultural popula-

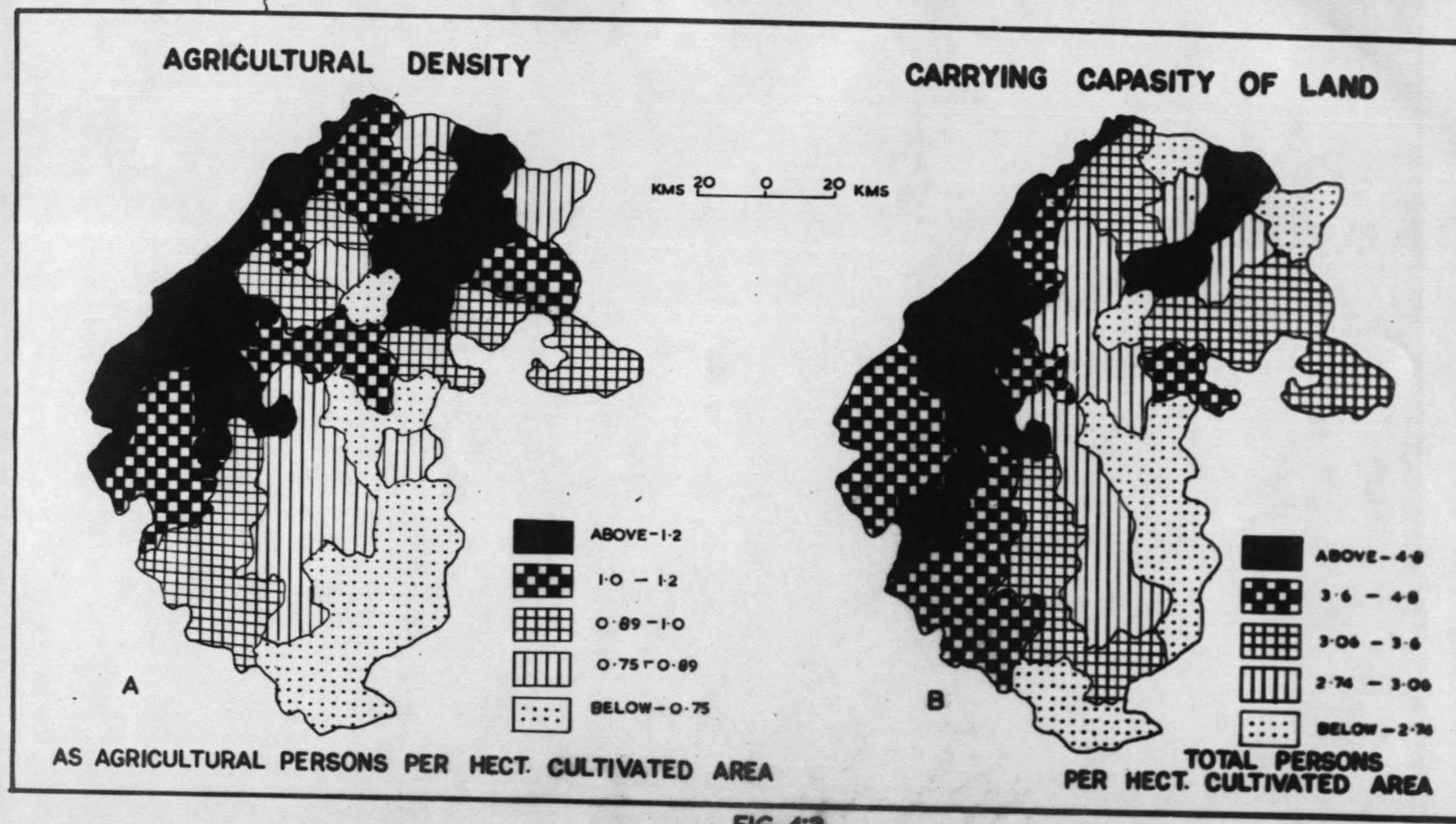


FIG. 4'3

tion on cultivated land or the per unit cultivated land associated with the agricultural population. In Mewar, the carrying capacity of land varies greatly ranging from max. 11.53 at Girwa tehsil to min. 1.76 at Partapgarh tehsil. The high carrying capacity as registered in Girwa tehsil followed by Shahpura, Bhilwara, Kumbhalgarh, Rajsamand, Nathdwara, Gogunda, Kherwara, and in Bhim tehsil, of the region and below 2.47 persons per hect.² observed in the eastern part of the region including Partapgarh, Dungla, Kushalgarh, Choti Sadri, Bari Sadri, Bagidora, Nimbahera, Rasmi, Jahazpur, and at Hurda tehsils. Medium carrying capacity found in central as well as in the southern part of the region. (Table 4.2). The above information represents a high pressure of population on cultivated land. Thus if we consider Prof. Easis² remark who recommends 2.5 acres of agricultural land per capita for keeping an individual in health and efficiency, secondly Prof. Mukherjee³ who recommends 5 acres of cultivated land as the minimum size for a family of 5 members, then the pressure on agricultural land is too high in Mewar (Fig. 4.3b).

Thus seemingly low general population density does not bring out the real picture of population pressure. The low density areas have as much population load as that of the high density area and this picture is brought into light by completing the land-man ratio. The sparsely populated areas have

2. Proceeding of the World Population Conference. pp.89.

3.. Mukherjee, R.K. - (1938) - "Food Planning for 400 millions". London, 1938. pp.1.

Table 4.2
Density of Population

S.No.	Distt/Tehsils	Arth- matic Den- sity per km. ²	Rural Den- sity per km. ²	Urban Density Per km. ²	Agricul- tural Density per Hect	Carrying capa- city of land per Hect.
(1)	<u>BHILWARA</u>					
1.	Asing	108	108	-	1.04	3.08
2.	Hurda	91	91	-	0.75	2.16
3.	Shahpura	90	77	1810.38	2.47	9.59
4.	Jahazpur	93	88	205.58	0.75	2.44
5.	Mandal	97	97	-	1.02	3.21
6.	Banera	94	94	-	0.93	2.91
7.	Bhilwara	178	106	689.79	1.19	5.51
8.	Raipur	103	103	-	0.92	2.84
9.	Sahara	112	112	595.11	0.76	2.89
10.	Kotri	88	88	-	1.21	2.84
11.	Mandalgarh	73	77	-	1.09	3.21
(2)	<u>UDAIPUR</u>					
1.	Ehim	128	128	-	1.40	4.51
2.	Deogarh	91	90	362.42	1.12	3.96
3.	Amet	106	106	-	1.05	3.60
4.	Kumbhalgarh	107	107	-	2.38	6.92
5.	Rajsamand	150	129	1412.89	0.99	4.48
6.	Railmagra	122	122	-	0.92	2.95

contd.....

contd.. Table 4.2

7. Nathdwara	139	121	1076.52	1.59	6.50
8. Mavali	141	141	-	1.00	3.92
9. Gogunda	95	95	-	1.84	5.84
10. Vallabhnagar	127	120	462.69	0.77	3.04
11. Girwa	185	93	2723.83	1.46	11.53
12. Kotra	63	63	-	1.09	3.88
13. Phalasia	61	61	-	1.10	3.86
14. Lasadia	78	78	-	0.83	2.97
15. Sarada	105	105	-	0.95	3.99
16. Salumber	117	109	1655.12	0.78	3.08
17. Kherwara	111	111	-	1.03	4.54

(3) CHITTORGARH

1. Rasmi	111	111	-	0.73	2.27
2. Gangrar	98	98	-	1.12	3.20
3. Begun	53	50	1268.69	0.94	3.09
4. Chittorgarh	143	110	1066.10	0.89	3.64
5. Kapasan	122	114	382.16	1.04	2.81
6. Bhadesar	110	110	-	1.06	2.81
7. Nimbahera	102	83	1088.28	0.56	2.17
8. Chito Sadri	89	77	586.94	0.75	2.15
9. Bari Sadri	120	106	479.93	0.70	2.46
10. Dungla	108	108	-	0.71	1.97
11. Partapgarh	77	70	1359.53	0.54	1.76

(4) DUNGARPUR

1. Dungarpur	167	155	3368.48	0.94	3.89
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contd.....

contd.... Table 4.2

2. Aspur	145	145	-	0.87	3.32
3. Sagwara	176	176	782.82	0.89	3.73

(5) BANSWARA

1. Ghatol	101	101	-	0.69	2.74
2. Garhi	164	164	-	0.81	3.15
3. Banswara	135	113	1325.08	0.65	3.06
4. Bagidora	151	151	-	0.69	2.43
5. Kushalgarh	118	113	2607.58	0.58	2.37
Regional	105.08	95.71	1015.50	-	-

very limited agricultural land to support only those few. Agriculture is the mainstay of the peoples.

OCCUPATIONAL STRUCTURE

Manpower planning has become an integral part of development planning. So is the need for the study of working force in various activity groups in Mewar, out of total population of 49,88,395 persons, about 33.8% are enumerated as workers giving a dependency of 1:2. In our present discussion economic activities have been classified into primary, secondary and tertiary sectors by rural and urban areas separately. The share of workers in the region in primary sector is 83.40 percent and remaining 16.60 percent workers engaged in secondary and tertiary sectors.

(i) Occupational Structure in Rural Areas :

Out of total rural population of 4,487,855, 34.51% are workers and there is little improvement in dependency ratio. The table given below shows that the regional rural economy is highly based on agriculture and other primary activities, and 89.29 percent are engaged in it and the remaining 10.71 percent only are engaged in secondary as well as in tertiary activities. The percentage of workers engaged in primary sector is lowest in Girwa (min. 79.23 percent). The Fig. 4.5 shows very low share of persons engaged in other services. The highest percentage of workers engaged in secondary and tertiary sector is found in Railmagra (7.76) and in Girwa (13.04) tehsils respectively, and lowest found in Kushalgarh

Rural Occupational Structure

DATA BASED UPON CENSUS 1971

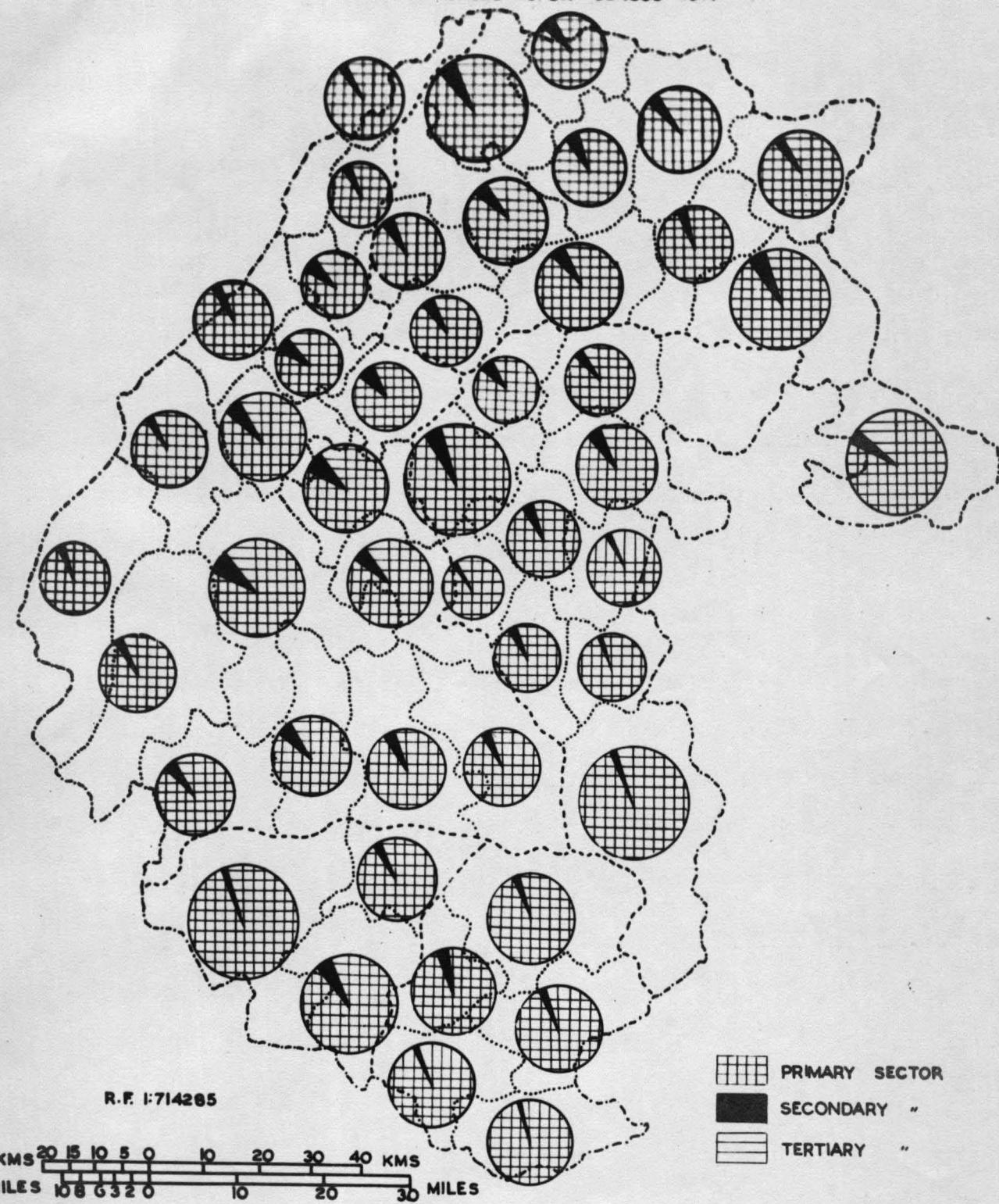


FIG. 4·4

Table 4.3
Occupational Structure in Rural Areas (1971)

S.No.	Distt/Tehsils	Primary Sector	Secondary Sector	Tertiary Sector
(1) <u>BHILWARA</u>				
1.	Asind	88.14	4.54	7.31
2.	Hurda	87.16	5.37	7.41
3.	Shahpura	91.42	3.96	4.57
4.	Jahazpur	92.64	3.28	4.03
5.	Mandal	88.95	4.50	6.51
6.	Banera	89.84	4.59	5.53
7.	Bhilwara	88.22.	5.26	6.47
8.	Raipur	88.93	4.76	6.30
9.	Shara	88.55	5.23	6.17
10.	Kotri	93.31	2.92	3.74
11.	Mandalgarh	87.39	4.69	7.87
(2) <u>UDAIPUR</u>				
1.	Bhim	90.09	3.25	6.62
2.	Deogarh	91.67	3.00	4.89
3.	Amet	84.06	6.26	9.62
4.	Kumbhalgarh	91.28	8.43	5.24
5.	Rajsamand	82.32	7.15	10.47
6.	Railmagra	86.18	7.76	6.01
7.	Nathdwara	86.86	5.80	7.30
8.	Mavali	79.42	7.57	12.96

contd.....

contd. Table 4.3

9.	Gogunda	91.11	3.02	5.84
10.	Vallabhnagar	84.67	5.50	9.78
11.	Girwa	79.23	7.70	13.04
12.	Kotra	93.00	1.86	5.09
13.	Phalasia	91.36	2.46	6.12
14.	Lasadia	90.36	3.36	6.03
15.	Sarada	86.08	5.07	8.79
16.	Salumber	90.47	4.68	4.78
17.	Kherwara	88.63	3.94	8.18

(3) CHITTORGARH

1.	Rasmi	86.49	5.78	7.86
2.	Gangrar	87.01	4.28	8.65
3.	Begun	81.78	3.79	14.38
4.	Chittorgarh	88.22	4.86	6.88
5.	Kapasan	91.08	5.06	3.82
6.	Bhadesar	91.05	3.76	5.14
7.	Nimbahera	91.68	3.65	4.64
8.	Choti Sadri	94.31	2.39	3.24
9.	Bari Sadri	90.99	3.75	5.22
10.	Dungla	90.68	3.13	6.13
11.	Partapgarh	94.44	1.82	3.68

(4) DUNGARPUR

1.	Dungarpur	93.69	1.74	4.51
2.	Aspur	90.75	2.84	6.35

contd.....

contd.. Table 4.3

3.	Sagwara	89.58	4.11	6.27
<hr/>				
(5)	<u>BANSWARA</u>			
1.	Ghatol	94.00	2.35	3.61
2.	Garhi	89.19	3.71	7.06
3.	Banswara	93.32	2.09	4.54
4.	Bagidora	93.27	2.23	4.45
5.	Kushalgarh	95.82	1.69	2.44
<hr/>				
Regional Mean		89.33	4.23	6.50
<hr/>				

(1.69) and (2.44) percent in order. Thus the rural areas of Mewar by and large highly based on primary occupation and negligible in other occupations (Fig. 4.4). The concentration of non-agricultural activities in rural areas in the urbanised tehsils indicates their existence to serve the need of the urban areas in those tehsils. From the correlation matrix below it is further clear that the primary and secondary sectors are highly negatively correlated in rural areas and even tertiary though insignificantly correlated with primary sector is negative; thus we could say that the rural economy has remained more or less independent of other sectors. The positive correlation between secondary and tertiary groups though low indicates their joint endeavour to serve the trading economy of the urban areas in exploiting the rural agricultural economy.

Correlation matrix rural occupational
structure

	Primary	Secondary	Tertiary
Primary	1.00		
Secondary	-0.77	1.00	
Tertiary	-0.22	+0.25	1.00

(ii) Urban Occupational Structure :

The share of urban land to the total land of the region is 1.05 percent. There are twenty towns and one city with total urban population of 5 lakhs of which only (27.68 percent) are workers. The worker to non-workers ratio is (1:2.6)

M E W A R Urban Occupational Structure

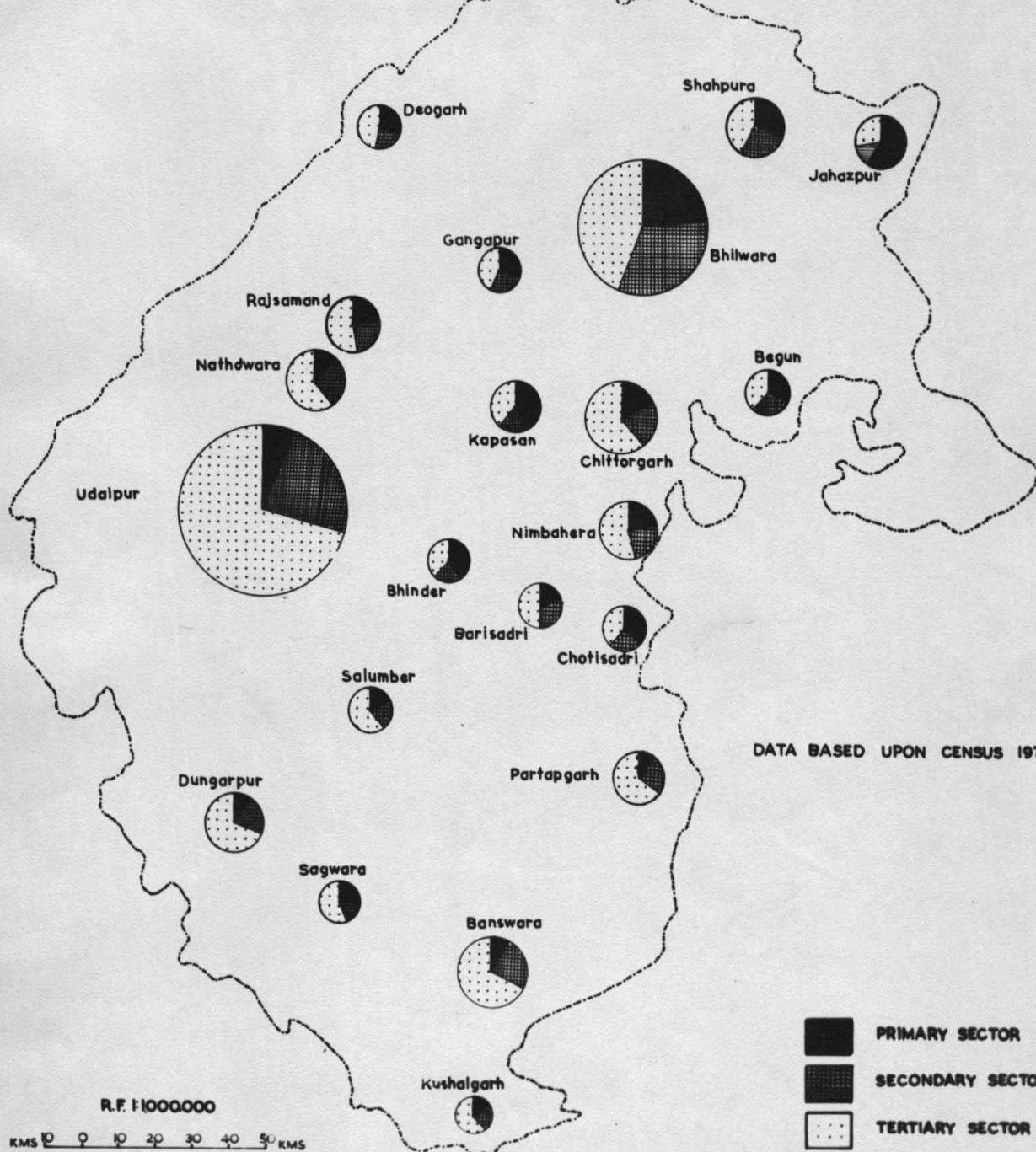


FIG. 4'5

giving a high dependency ratio. The higher dependency ratio in the urban areas over the rural parts of the region is a significant phenomenon and indicates low economic level of the urban areas. By the participation of urban workers into economic sectors, it is significant to note that a high proportion of them are engaged in primary sector (17.5). This predominance of primary sector economic activity particularly in smaller towns signifies that most of them are overgrown villages.

The percentage of workers engaged in secondary sector observed high in Bhilwara, (32.36) followed by Begunji Bari Sadri, and in Nathdwara.

In case of tertiary sector, Udaipur comes in highest rank (71.07) followed by Dungarpur, Banswara, Partapgarh and Chittorgarh. The lowest percentage found in Jahazpur (27.46). It is remarkable to note, that the Jahazpur has the primacy in primary occupation. The over all occupational structure shows that the economy is heavily based on agriculture in rural areas and the economy of the urban areas is mainly of tertiary sector with high dependency ratio (1:2.61) (Fig. 4.5a and Table 4.4). From the correlational analysis of trisectoral urban functions shows no correlation between the secondary and tertiary activities while primary sector is significantly but inversely related with tertiary sector. Although the relationship of primary to secondary sectors is inverse but is not significant. Thus the pattern of urban occupational groups are very irregular and are dominated by service sector signifying the

Correlation matrix Urban Occupational Structure

	Primary	Secondary	Tertiary
Primary	1.00		
Secondary	-0.29	1.00	
Tertiary	-0.94	-0.02	1.00

urban character which is mainly servicing the backward rural economy in extractive manner.

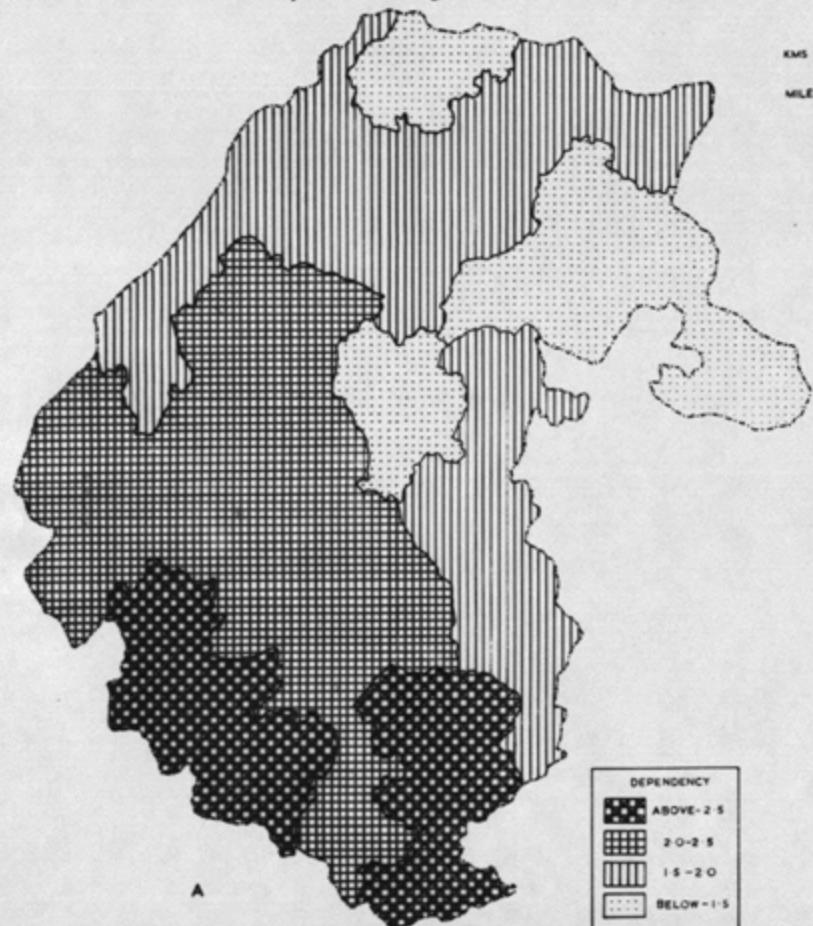
General Demographic Characteristics :

(i) Dependency Ratio :

The ratio of workers to non-workers (Fig. 4.6) shows that it is high in south and southeastern part of the region, and low in north, north-east and eastern part of the region. It reveals that the areas which are covered by tribal community and urban units have maximum dependency ratio, and are recorded at Kushalgarh (1:2.73) followed by Banswara, Ghatol, Sagwara, Dungarpur and Kherwara tehsils, and minimum at Kotri (1:1.08) tehsil followed by Asind, Hurda, Kotri, Mandalgarh, Gangrar, Kapasan, Bhaderar and at Dungla, (Table 4.5). The average regional dependency is 1:1.95. The tendency of high dependency seems to be contributed by big size of households and high sex ratio, and the low ratio in the rural areas may be due to mainly under reporting of the non-workers as is the case of other parts of India or as they share with other family members the same agricultural occupation and report as cultivators. The figures 4.7 and 4.8 show strong correlation between

M E W A R

Dependency Ratio



Mean Size Of The Households

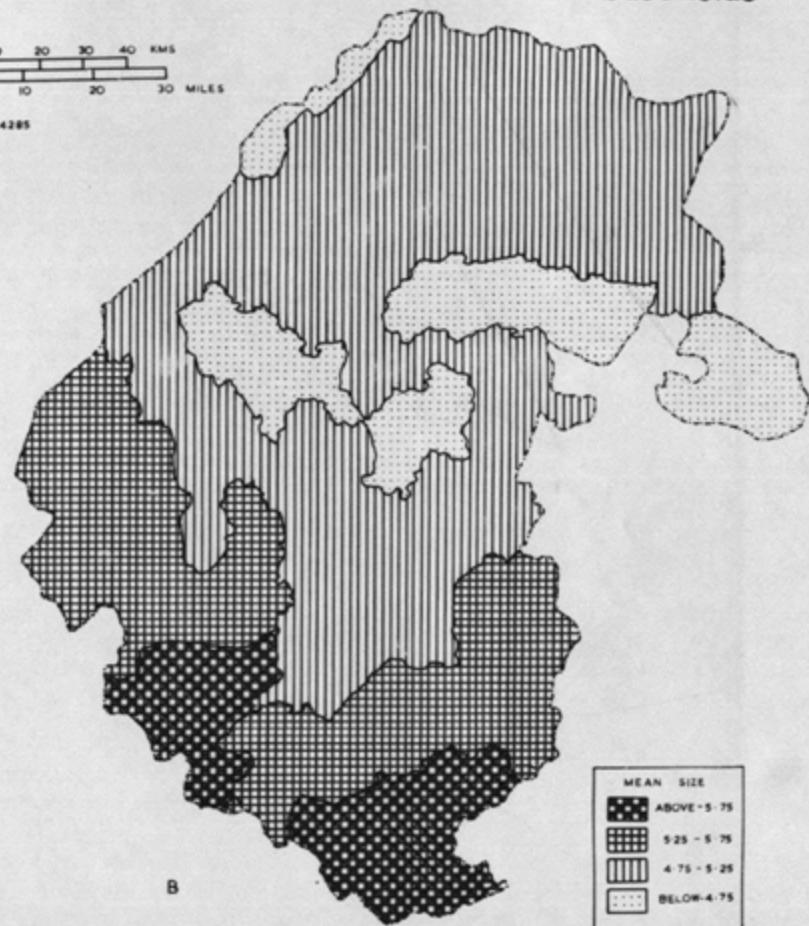


FIG. 46

Table 4.4
Urban Occupational Structure

S.No.	Distt/Tehsils	Primary Sector	Secondary Sector	Tertiary Sector
(1) <u>BHILWARA</u>				
1.	Shahpura	30.70	26.07	43.18
2.	Jahazpur	58.58	13.65	27.46
3.	Bhilwara	23.91	32.36	43.67
4.	Sahara	31.39	23.93	44.65
(2) <u>UDAIPUR</u>				
1.	Deogarh	30.11	23.22	46.64
2.	Rajsamand	22.00	25.32	53.08
3.	Nathdwara	11.71	26.67	61.58
4.	Vallabhnagar	38.31	22.63	39.01
5.	Girwa	6.14	22.81	71.01
6.	Salumber	16.69	21.70	61.55
(3) <u>CHITTORGARH</u>				
1.	Begun	31.10	30.87	37.98
2.	Chittorgarh	16.62	20.87	62.45
3.	Kapasan	40.89	19.40	39.66
4.	Nimbahera	21.19	23.61	55.15
5.	Choti Sadri	36.13	25.10	38.72
6.	Bari Sadri	20.43	29.83	49.69
7.	Partapgarh	8.46	25.59	65.91

contd....

contd.. Table 4.4

(4) DUNGARPUR

1.	Dungarpur	10.79	18.82	70.33
2.	Sagwara	22.62	22.20	55.12

(5) BANSWARA

1.	Banswara	8.48	23.46	68.02
2.	Kushalgarh	14.39	23.38	62.18

Regional Mean	23.84	23.88	52.24
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MEWAR
General Sex Ratio

DATA BASED UPON CENSUS 1971.

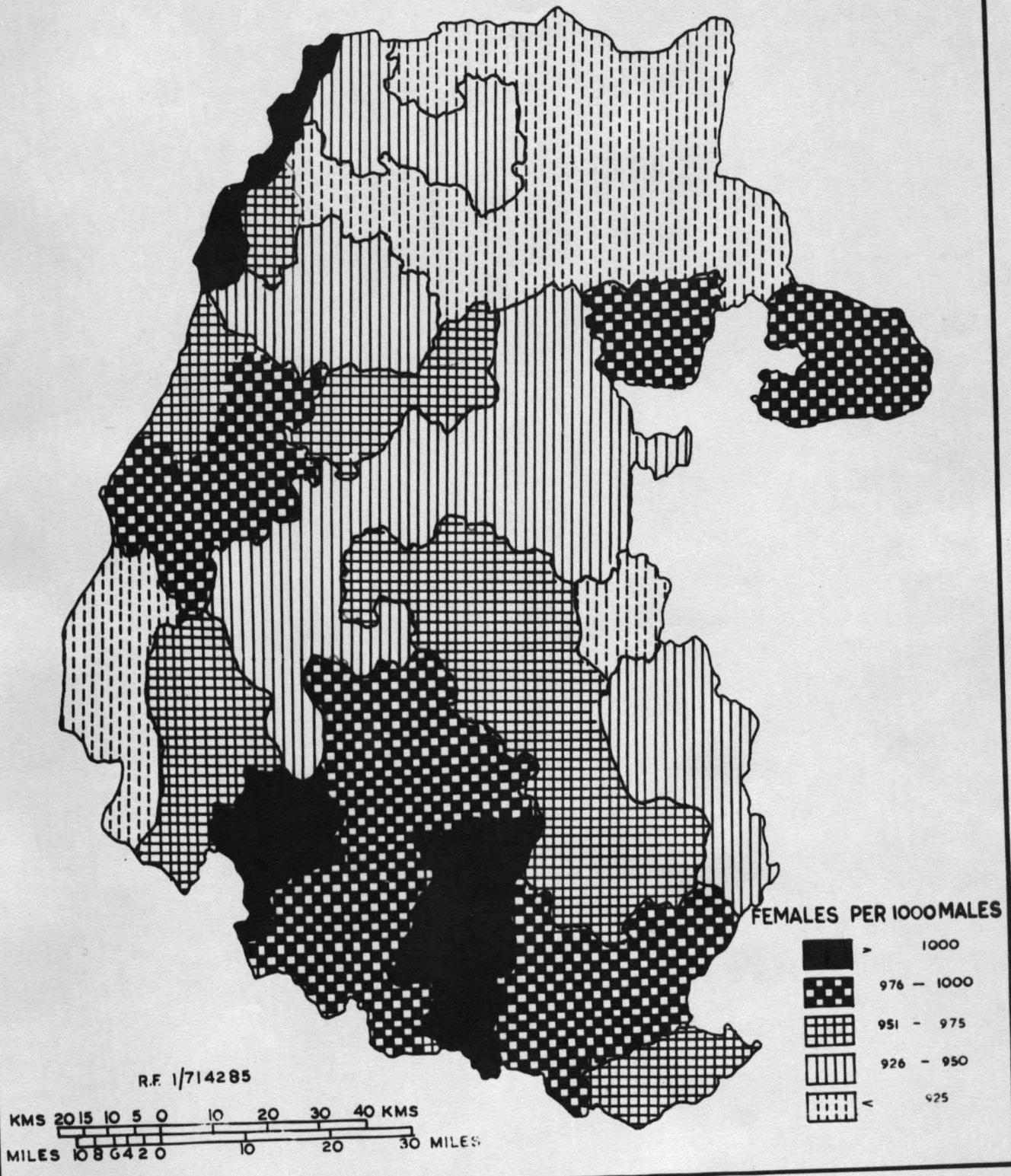


FIG. 4·7

household size and dependency ratio i.e. larger the size of household, greater is the dependency ratio and vice-versa.

(ii) Sex Ratio :

The average regional sex ratio of Mewar is quite high. There are 950.25 females per 1000 males. (The proportion of Rajasthan as a whole is 911 per 1000 males). It has been observed that Aspur (1065) and Sagwara (1025) tehsil of Dungarpur district, Bhim (1021) and Kherwara (1043) tehsils of Udaipur district have high proportion of sex-ratio. The low sex ratio (below 925) found in the northern part of the region covering almost Bhilwara district, in which the lowest recorded at Bhilwara tehsil (887). The remaining tehsils show medium-low to medium-high sex ratio increasing from north to south. Thus as a whole, the general pattern reveals low sex ratio in north and high in south. (Fig. 4.7 and Table 4.5). The low urban sex ratio coupled with high dependency ratio in urban areas show migration to urban areas is not only selective in favour of males but most of them come expecting job and remain as parasitic. It reveals from the figure no.4.7 that sex ratio is highest among the tribal population who are mainly rural with low literacy level.

(iii) General Literacy Rate :

Only 15.95 percent of the regional population knows how to read and write, while the state average is 19 percent. Thus the regional literacy is lower than the state. The literacy rate falls in the range 8.37 in Phalasia tehsil to 34.13 in

Mewar
General Literacy
DATA BASED UPON CENSUS 1971

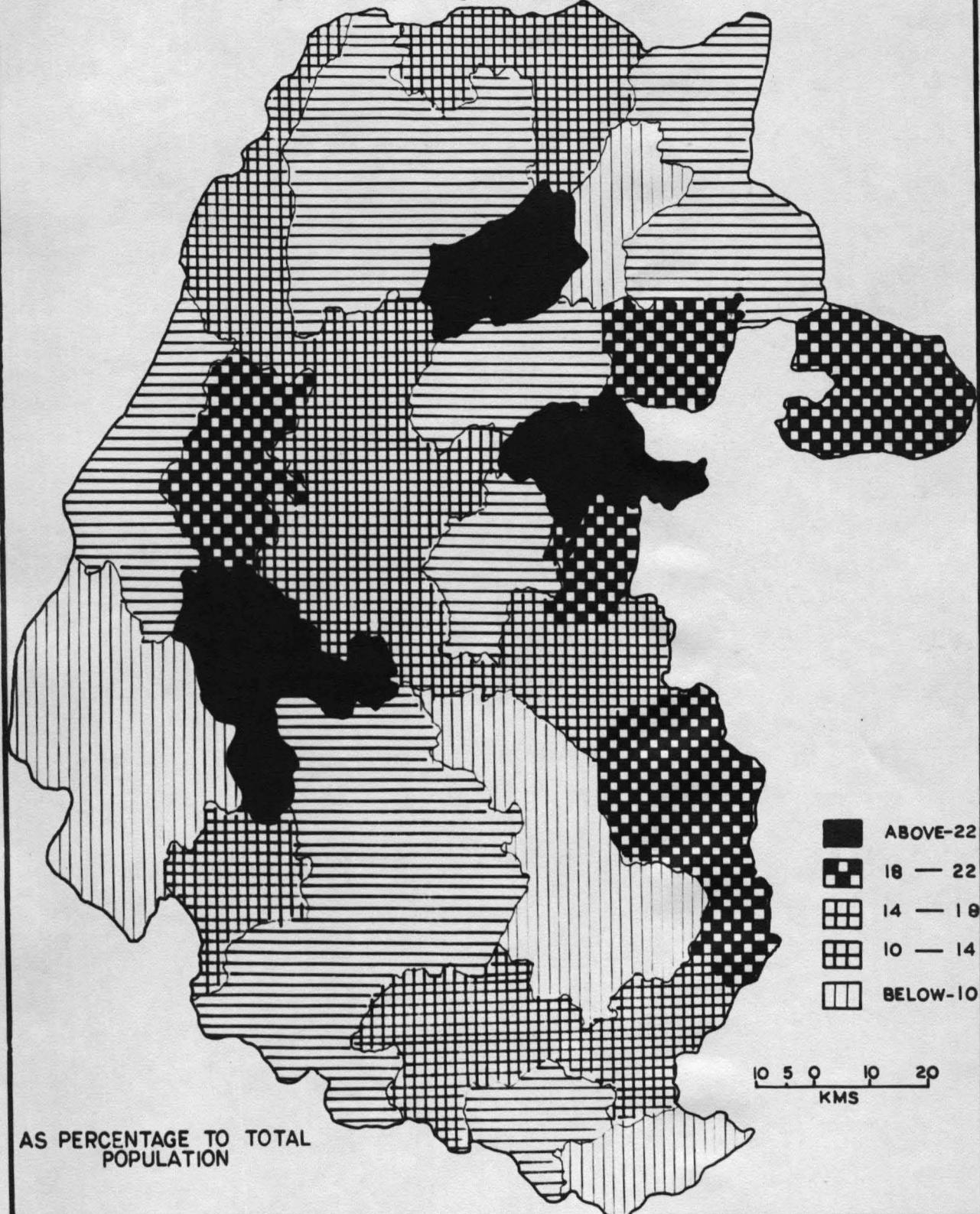


FIG. 4'8

Girwa tehsil. The high and medium high literacy rate recorded at Girwa (34.13), Bhilwara (26.52), Chittorgarh (22.92), Nathdwara (20.01), Rajsamand (19.54), Nimbahera (21.06), Begun (18.82) and at Partapgarh (18.11) tehsils. The low and medium low literacy rate found in the rural areas of Mewar and medium literacy found in the tehsils which are near and around the urban areas. Except in urban area, it is always low among the rural people particularly in the south. The south and southwest Mewar to mainly populated by the tribes among whom literacy level is further low (Fig. 4.8). The literacy level not only differentiates urban and rural people but also classes of people. There are more literates in urban areas than in rural areas in general and on the other tribal communities are generally illiterate infavour of higher caste people.

(iv) Household size in Mewar :

In 1971 average size of the households in Mewar is 5.13, which is slightly lower than the state average (5.72). Fig. 4.6b shows that the average size of households is high in the southern part than in the northern part of the region, but it is notable that there is little variation through out the region. The maximum size is recorded at Kushalgarh (6.39) tehsil and minimum at Begun (4.48) tehsil. The household sizes tend to bigger where sex ratio is high and density of rural population is also high. (Table 4.5).

Table 4.5
General Characteristics of Population

S.No.	Distt/Tehsils	Dependency Ratio	Sex Ratio	Literacy rate in %	Average size of the household
(1) <u>BHILWARA</u>					
1.	Asind	1.39	930	12.08	5.16
2.	Hurda	1.33	911	16.57	5.20
3.	Shahpura	1.95	915	15.10	5.03
4.	Jahazpur	1.67	888	12.41	5.03
5.	Mandal	1.59	923	10.45	4.84
6.	Banera	1.69	935	11.90	4.98
7.	Bhilwara	1.59	887	26.52	4.78
8.	Raipur	1.63	933	12.03	5.13
9.	Sahara	1.96	931	15.76	5.00
10.	Kotri	1.08	903	9.92	4.75
11.	Mandalgarh	1.38	889	12.06	
(2) <u>UDAIPUR</u>					
1.	Bhim	1.73	1021	15.40	4.73
2.	Deogarh	1.82	952	14.95	4.93
3.	Amet	1.81	943	14.21	5.08
4.	Kumbhalgarh	1.62	961	11.50	4.79
5.	Rajsamand	2.21	986	19.54	5.06
6.	Railmagra	1.69	960	14.63	5.20
7.	Nathdwara	2.11	979	20.01	4.73

contd.....

contd... Table 4.5

8.	Mavali	2.04	939	17.44	4.72
9.	Gogunda	1.79	981	11.47	4.99
10.	Vallabhnagar	2.16	962	16.56	4.79
11.	Girwa	2.33	938	34.13	4.97
12.	Kotra	2.28	923	4.22	4.45
13.	Phalsasia	2.02	959	8.37	5.56
14.	Lasadia	2.21	951	8.85	5.20
15.	Sarada	2.38	979	12.80	5.39
16.	Salumber	2.33	998	13.10	4.94
17.	Kherwara	2.89	1043	14.04	5.65

(3) CHITTORGARH

1.	Rasmi	1.50	961	12.25	4.64
2.	Gangrar	1.38	941	13.67	4.62
3.	Begin	1.45	980	18.82	4.46
4.	Chittorgarh	1.86	932	22.92	4.78
5.	Kapasan	1.24	939	16.00	4.85
6.	Bhadesar	1.31	937	12.51	4.71
7.	Nimbahera	1.97	930	21.06	5.09
8.	Choti Sadri	1.50	929	16.65	5.09
9.	Bari Sadri	1.86	955	17.56	4.79
10.	Dungla	1.42	957	13.21	4.72
11.	Partapgarh	1.86	945	18.11	5.40

(4) DUNGARPUR

1.	Dungarpur	2.64	992	13.60	5.87
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contd.....

2.	Aspur	2.45	1065	12.32	5.10
3.	Sagwara	2.56	1025	16.37	5.53

(5) BANSWARA

1.	Ghalol	2.71	971	8.48	5.60
2.	Garhi	2.42	997	16.65	5.74
3.	Banswara	2.69	976	16.96	5.80
4.	Bagidora	2.29	979	10.29	6.10
5.	Kushalgarh	2.73	970	9.19	6.39

Regional Mean	1.95	950.25	15.95	5.13
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Section - B

SPECIAL DISTRIBUTION PATTERN OF SCHEDULED CASTE AND SCHEDULED TRIBES

Generally, caste is the name given to a group of certain class of people into which a society is divided; besides which in India there are two major groups of constitutional castes: scheduled caste and scheduled tribes. The scheduled caste people formerly known as depressed classes, form the fifth order of the four fold society of Hindu theory of caste mentioned in the republican constitution and have not only been provided special privileges in the matter of recruitment to services, but also with special representation in the legislative bodies, educational facility and other social welfare activities. Besides it, another constitutional caste is the scheduled tribes. The original form of scheduled tribes is the aggregation of persons who have, or believed themselves to have, a common origin; it is thus, together with common political interests and the need of mutual defence that holds them together. As a definition we could say that the constitution of India makes provisions for the listing of the tribes under a schedule for special treatment; the tribes so listed are called the scheduled tribes.

The scheduled caste and scheduled tribes are most dominant communities in the formation of social entity particularly in Mewar. Although, the data on general caste level are available in census 1931, but no analysis has yet been

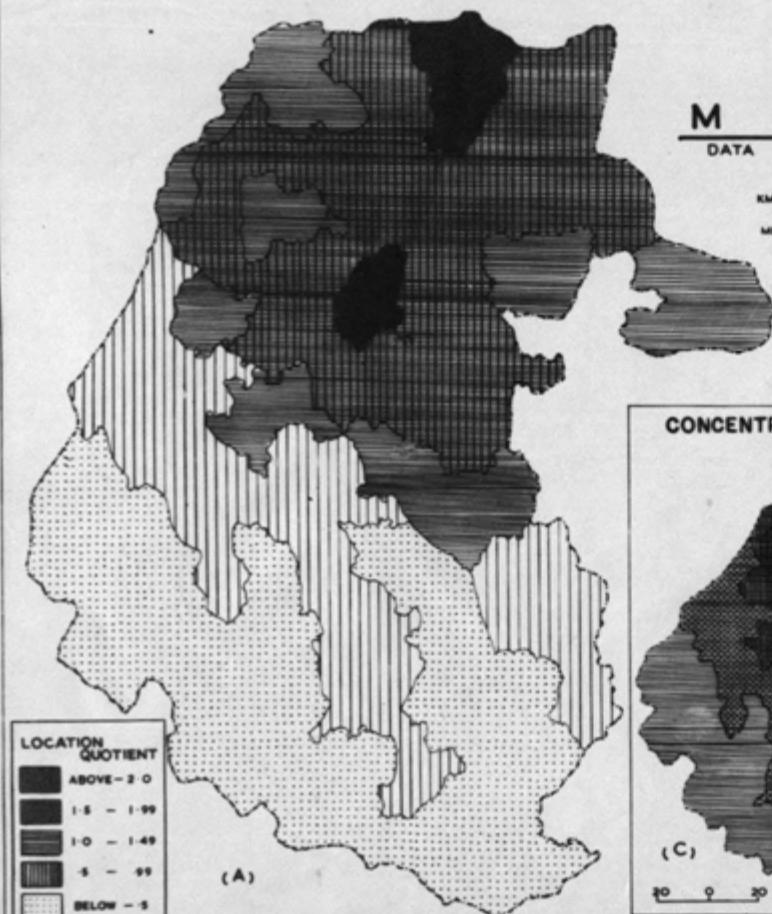
done on their spatial distribution. On the basis of location quotient their concentration in various tehsils has been identified. The coefficient of correlation also has been worked out ($r = -0.915$) between scheduled caste and scheduled tribes. In other words, they are spatially segregated; higher the number of scheduled caste people lower is that of scheduled tribes.

Concentration of Scheduled Caste :

In 1971 census, 9.65 percent population (481,805) had been enumerated as scheduled caste to the total population of the region. The share of scheduled caste to the rural and urban population of the region separately is 9.69 and 9.39 percent respectively. The rural scheduled caste (9.39 percent to the total rural population) concentration is high above norm in the northern part of the region, which covers the district of Bhilwara as a whole, 3/4th of the Chittorgarh district, Rasmi (2.03) and Shahpura (2.00) tehsils, (Fig. 4.9a). The remaining southern part of the region is sparsely distributed (below norm) which covers Dungarpur, and Banswara districts as a whole and southern part of the Udaipur district and Partapgarh tehsil of the Chittorgarh district. The overall picture shows a tendency of gradual decrease in the concentration of scheduled caste from north to south (Fig. 4.9a). The spatial distribution has divided the region into two big sub regions: thickly distributed northern region and thinly distributed southern region.

The share of urban scheduled caste in the total urban

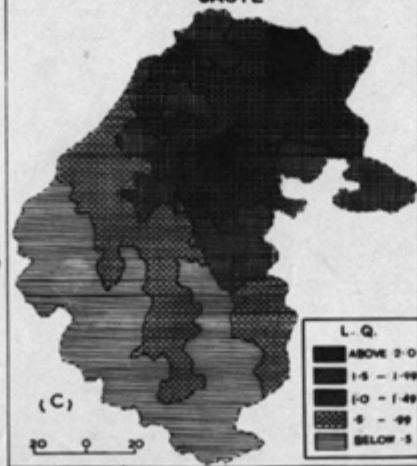
Concentration Of Rural Scheduled Caste



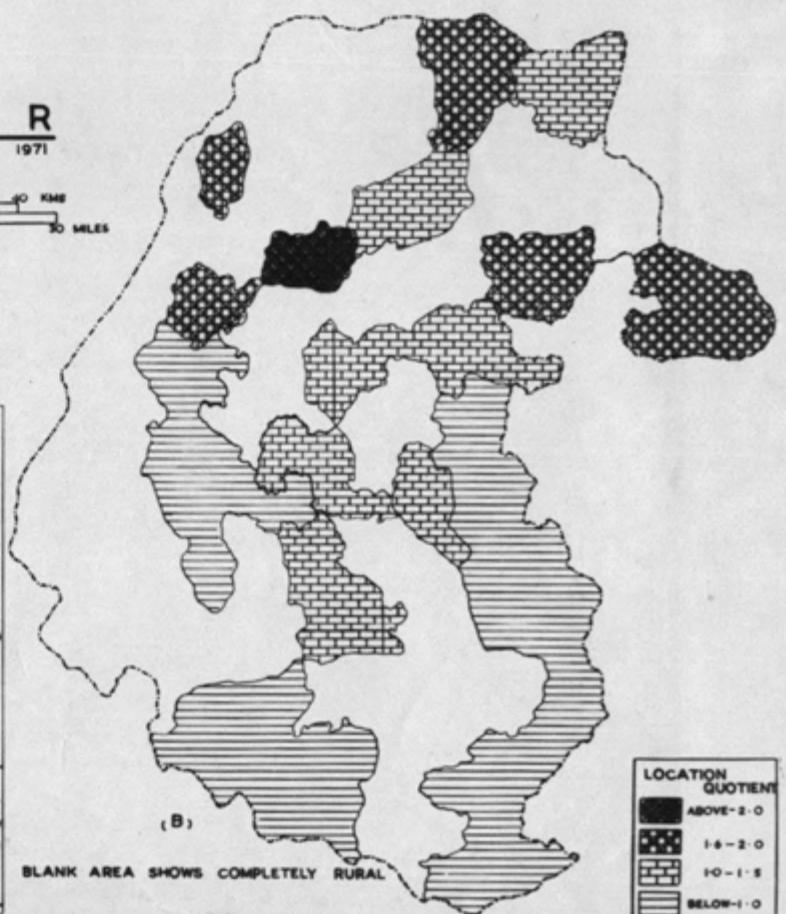
M E W A R
DATA BASED UPON CENSUS 1971

KMS 0 5 10 15 20 25 30 KMS
MILES 0 5 10 15 20 25 30 MILES

CONCENTRATION OF SCHEDULED CASTE



Concentration Of Urban Scheduled Caste



R.K. BHAIJHAI

FIG. 49

population is about 9.39 percent. The distribution pattern shows highest concentration in Sahara (2.14), followed by Shah-pura (1.57), Deogarh (1.66), Rajsmand (1.55), Salumber (1.01), Vallabhnagar (1.24), Begun (1.75), Jahazpur (1.27), Bhilwara (1.38), Chittorgarh (1.15), Kapasan (1.37) and in Bari Sadri (1.13).

The low concentration below norm has been observed in the remaining urban tehsils. The lowest recorded in Kushalgarh (0.48) tehsil. The variation between maximum (2.14) and minimum (0.48) location quotients is very wide (1.66), (Fig. 4.9b). The total scheduled caste concentration has been separately shown in the map (Fig. 4.9c) following the pattern of rural areas because of their dominance in rural areas in comparison to urban. So, scheduled caste people are mostly concentrated in the rural areas rather than in urban areas.

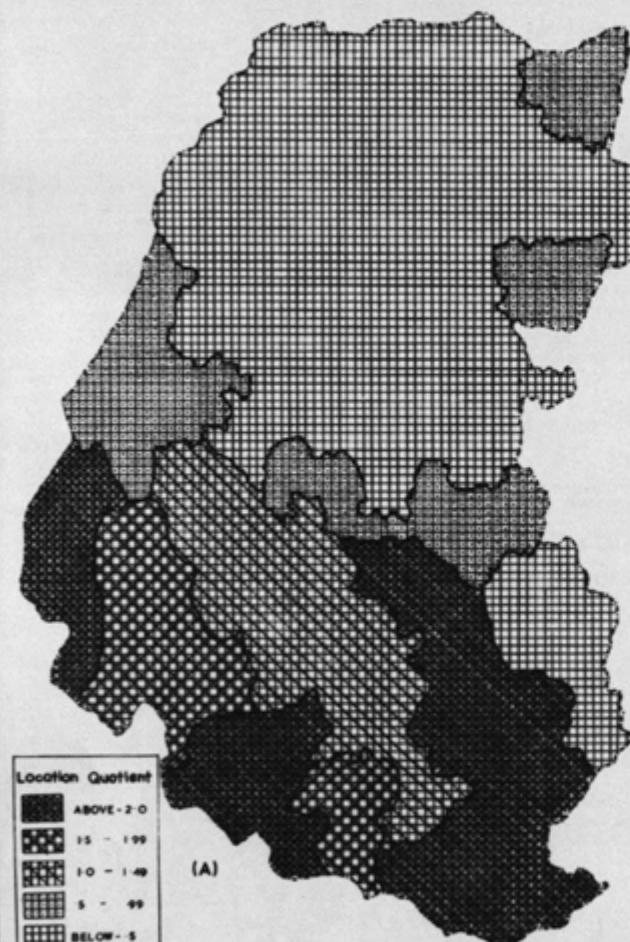
Concentration of Scheduled Tribes :

In Mewar, according to the 1971 census, there were 1,705,689 (34.19%) scheduled tribal people which constituted 37.60% while only 17877 (35.7%) are urban.

The rural scheduled tribes are dominantly concentrated in the hilly tracts and the jungles of the southern part of the region, but sparsely distributed in the northern Mewar plain. The highest location quotient is found in Kushalgarh (2.40) tehsil and lowest in (0.05) Bhim tehsil. (Fig. 4.10a).

The tribal community of Mewar is primarily living in rural areas and are far from the influence of urban areas giv-

Concentration Of Rural Scheduled Tribes



M E W A R

DATA BASED UPON CENSUS 1971

KMS 20 15 10 5.0 10 20 30 40 KMS
MILES 10 8 6 4 2 0 10 20 30 MILES
R.F.I./714285

CONCENTRATION OF SCHEDULED TRIBES

(C)

L.Q.

- ABOVE - 2.0
- 1.5 - 1.99
- 1.0 - 1.49
- 0.5 - .99
- BELOW - .5

(B)

BLANK AREA SHOWS COMPLETELY RURAL

Concentration Of Urban Scheduled Tribes

By Location Quotient Method

Location Quotient

- ABOVE - 2.0
- 1.0 - 1.99
- .5 - .99
- BELOW - .5

J.K. DHAIBHAI

FIG. 4'10

Table 4.6
Distribution of Scheduled Caste and Scheduled Tribes

S.No.	Distt/Tehsils	Percentage of Scheduled Caste to total Population and Location Quotient (in brackets)			Percentage of Scheduled Tribes to total Population and Location Quotient (in brackets)		
		Total	Rural	Urban	Total	Rural	Urban
(1)	BHILWARA	167031	151208	15823	98784	95235	3549
1.	Asind	13.16 (1.37)	13.16 (1.37)	-	7.56 (.22)	7.56 (.20)	-
2.	Hurda	14.65 (1.52)	14.65 (1.52)	-	8.08 (.24)	8.08 (.21)	-
3.	Shahpura	19.39 (2.0)	20.20 (2.08)	14.82 (1.57)	8.54 (.25)	9.80 (.26)	1.44 (.40)
4.	Jahazpur	16.88 (1.75)	17.38 (1.79)	11.91 (1.27)	32.62 (.95)	33.32 (.89)	25.70 (7.2)
5.	Mandal	14.96 (1.55)	14.96 (1.55)	-	5.47 (.16)	5.47 (.14)	-
6.	Banera	16.78 (1.74)	16.78 (1.74)	-	6.78 (.20)	6.78 (.18)	-
7.	Bhilwara	14.83 (1.54)	16.67 (1.72)	12.84 (1.38)	2.82 (.08)	4.60 (.12)	0.89 (.25)
8.	Raipur	13.79 (1.43)	13.79 (1.43)	-	5.49 (.16)	5.49 (.15)	-

contd.....

contd.. Table 4.6

9.	Sahara	15.43 (1.60)	14.75 (1.52)	19.95 (2.14)	6.0 (.17)	6.58 (.17)	2.10 (.59)
10.	Kotri	16.76 (1.73)	16.76 (1.73)	-	5.41 (.16)	5.41 (.14)	-
11.	Mandalgarh	17.65 (1.82)	17.65 (1.82)	-	14.19 (.41)	14.19 (.38)	-
(2)	<u>UDAIPUR</u>	139975	122843	17133	607107	601057	6050
1.	Bhim	10.25 (1.06)	10.25 (1.06)	-	2.08 (.06)	1.08 (.05)	-
2.	Deogarh	16.30 (1.69)	16.45 (1.68)	15.55 (1.66)	3.88 (.11)	4.51 (.12)	0.61 (.17)
3.	Amet	14.97 (1.55)	14.97 (1.55)	-	7.32 (.21)	7.32 (.14)	-
4.	Kumbhalgarh	9.08 (.94)	9.08 (.94)	-	22.66 (.66)	22.66 (.66)	-
5.	Rajsamand	11.28 (1.17)	10.67 (1.10)	14.54 (1.55)	11.92 (.35)	13.50 (.36)	3.52 (.98)
6.	Railmagra	15.78 (1.63)	15.78 (1.63)	-	7.78 (.23)	7.78 (.20)	-
7.	Nathdwara	8.42 (.87)	8.82 (.91)	6.05 (.64)	18.94 (.55)	20.90 (.55)	7.31 (2.04)

contd....

contd.. Table 4.6

8.	Mavali	10.64 (1.10)	10.64 (1.09)	-	16.54 (048)	16.54 (.44)	-
9.	Gogunda	8.10 (.83)	8.10 (.83)	-	37.23 (1.08)	37.23 (0.99)	-
10.	Vallabhnagar	9.27 (.96)	9.08 (.94)	11.68 (1.24)	22.37 (.65)	23.55 (.63)	7.84 (2.19)
11.	Girwa	6.61 (.68)	6.67 (.69)	6.55 (.69)	22.97 (.67)	45.49 (1.21)	1.95 (.55)
12.	Kotra	1.78 (.18)	1.78 (.18)	-	85.16 (2.49)	85.16 (2.26)	-
13.	Phalasia	3.01 (.31)	3.01 (.31)	-	63.70 (1.86)	63.70 (.169)	-
14.	Lasadia	4.70 (.49)	4.70 (.49)	75.62 -	75.62 (2.21)	75.62 (2.01)	-
15.	Sarada	4.27 (.44)	4.27 (.44)	-	53.21 (1.56)	53.21 (1.41)	-
16.	Salumber	5.34 (.55)	4.96 (.51)	9.52 (1.01)	45.56 (1.33)	49.41 (1.31)	2.25 (.63)
17.	Kherwara	3.62 (.37)	3.62 (.37)	-	70.73 (2.06)	70.73 (1.88)	-
(3)	<u>CHITTORGARH</u>	128910	118534	10376	184949	183173	1776

contd.....

60

contd... Table 4.6

1. Rasmi	19.60 (2.03)	19.60 (2.02)	-	5.61 (.16)	5.61 (.15)	-
2. Gangrar	16.38 (1.70)	16.38 (1.69)	-	7.29 (.21)	7.29 (.19)	-
3. Begun	14.03 (1.45)	13.85 (1.43)	16.39 (1.74)	17.69 (.51)	18.93 (.50)	.38 (.10)
4. Chittorgarh	14.85 (1.54)	16.27 (1.68)	10.83 (1.15)	10.18 (.29)	12.56 (.33)	3.46 (.97)
5. Kapasan	16.06 (1.66)	16.41 (1.69)	12.09 (1.37)	19.96 (.58)	10.81 (.29)	2.18 (.61)
6. Bhadesar	16.26 (1.68)	16.26 (1.68)	-	7.18 (.21)	7.18 (.19)	-
7. Nimbahera	14.36 (1.45)	15.76 (1.63)	8.61 (.91)	12.09 (.35)	14.71 (.39)	1.29 (.36)
8. Choti Sadri	11.45 (1.19)	11.17 (1.15)	12.98 (.38)	22.86 (.84)	33.77 (.90)	1.58 (.44)
9. Bari Sadri	12.23 (1.27)	12.51 (1.29)	10.64 (1.13)	24.93 (.72)	29.23 (.78)	.42 (.11)
10. Dungla	14.36 (1.49)	14.36 (1.48)	-	12.44 (1.36)	12.44 (.33)	-
11. Partapgarh	7.39 (.82)	8.09 (.83)	6.59 (.70)	47.18 (1.37)	52.51 (.40)	1.18 (.33)

contd.....

contd... Table 4.6

(4)	<u>DUNGARPUR</u>	21115	19213	1902	337480	333485	3995
1.	Dungarpur	2.84 (.29)	2.51 (.26)	6.15 (.65)	73.97 (2.16)	79.28 (2.11)	8.95 (2.50)
2.	Aspur	5.63 (.58)	5.63 (.58)	-	47.33 (1.38)	47.33 (1.26)	-
3.	Sagwara	4.79 (.49)	4.70 (.48)	5.96 (.63)	57.05 (1.66)	59.76 (1.59)	19.36 (5.42)
(5)	<u>BANSWARA</u>	24774	22996	1778	477369	474862	2507
1.	Ghatol	4.25 (.44)	4.25 (.43)	-	79.23 (2.31)	79.23 (2.1)	-
2.	Garhi	5.44 (.56)	5.44 (.56)	-	51.98 (1.52)	51.98 (1.38)	-
3.	Banswara	3.49 (.36)	3.05 (.31)	5.53 (.59)	65.08 (1.90)	77.76 (2.06)	6.39 (1.79)
4.	Bagidora	3.60 (.37)	3.59 (.37)	-	81.67 (2.39)	81.67 (2.18)	-
5.	Kushalgarh	2.28 (.24)	2.17 (.22)	4.50 (.48)	86.47 (2.53)	90.13 (2.40)	13.43 (3.76)
<u>Regional Mean</u>		9.65	9.69	9.39	34.19	37.60	3.57

ing rise to high rural population density.

The highest urban tribal concentration is found in Sagwara (5.42), Kushalgarh (3.76), Dungarpur (2.50), Vallabhnagar (2.19) and in Nathdwara (2.04) which only small centres (Fig. 4.10b). The low concentration has been observed in the urban areas of the eastern as well as the northern towns of the region. Although it is expected that the proportion of tribal population should be larger in the tribally dominated area's urban population even if the urban centres are small and domi-native in size, surprisingly their proportion among the urban population in the south is smaller than their share in rural population. So, the urban centres in the tribally dominated areas are having exogenous character; and trading classes of higher caste dominate the urban scene. As a matter of fact tribal people are observed not urban minded and remained se-cluded from the urban community. It could safely be said that where scheduled caste population is predominant, scheduled tribes are by and large negligible; it has also been proved statistically that there is a north-south patterning in the distribution of scheduled caste and scheduled tribes.

**

Chapter V, pages 97-127, is not available

CHAPTER VISETTLEMENT STRUCTURE: Rural and Urban

Among the three basic necessities of human beings, the settlements come in third order after food and clothing. So for the evolution of settlement pattern may be traced back to the history of Indian civilisation. It has been already noticed in Chapter second, that "Gulind" and "Nagri" were some of the oldest ancient civilised settlements of the region. The settlements were very small in size and were fully dependent on agricultural productivity and its pattern in the region. In mediaval period the name of settlements, their number size, and function all were acquired from their contemporary Empire, like Bari Hazipur near Chittorgarh and Islampur Mohan, now known as Mohi and changed their character in course of time by the introduction of any function to them. Thus the historic evolution of settlement structure in terms of size, economic base and their spatial distribution is not static but a dynamic one.

Rural Settlement Pattern: Frequency Distribution of Villages and their Population Size :

The census 1971 recorded that in Mewar there are about 9011 inhabited villages of all size classes having 4.49 million people, which is about 89.96 per cent of the total. The rural settlements of the region have been categorised in five groups from less than 200 persons to above 2000 persons. Thus, with the help of the respective categories, it has been seen that

33.43 per cent villages comes under first category of the size (below 200 persons). The villages of this size class are inhabited by 7.51 per cent of rural population. About 35.63 per cent villages are between the size of 200 to 499 persons, inhabited by 23.47 per cent rural population. The settlements of this class are highest in number in the while region. The third size (500-999) class villages are about 19.48 per cent having 27.14 per cent rural population and 23.18 per cent rural population is living in 8.49 per cent villages of the fourth size classes having population between 1000 to 1999 persons. Finally, 2.97 per cent villages are inhabited by 18.70 per cent rural population in size class of above 2000 persons. (Fig. 6.1 and also table given below).

Table 6.1(A)
Cummulative Frequency (in %) distribution of Villages in
Mewar 1971

Class	Size of the Villages	No. of Villages	Percentage of Villages	Cummulative per cent number of Villages
I	Below 200	3013	33.43	33.43
II	200-499	3210	35.63	69.06
III	500-999	1755	19.48	88.54
IV	1000-1999	765	8.48	97.03
V	Above 2000	268	2.97	100.0
Total		9011	100%	-

Mewar
Frequency Distribution Of Villages & Their Population 1971.

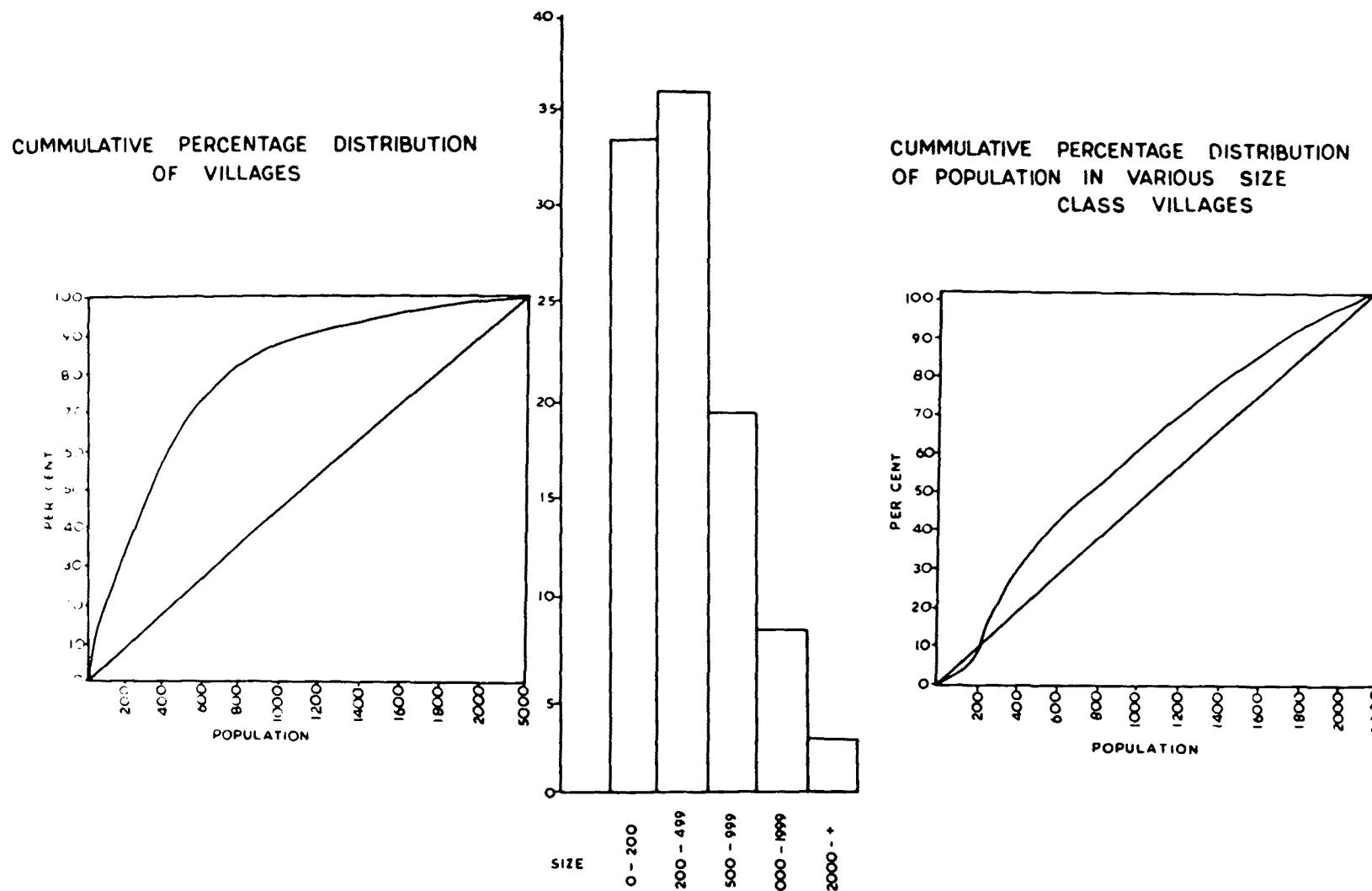


FIG. 6'1

Table 6.1(B)

Cummulative Frequency (in %) distribution of Population in Various Size Class Villages in Mewar-1971

Class	Size of the Villages	No. of the Population	Percentages of Popula- tion	Cummulative Percentage
I	Below 200	337240	7.51	7.51
II	200-499	1053224	23.47	30.98
III	500-999	1218009	27.14	58.12
IV	1000-1999	1040282	23.18	81.30
V	Above 2000	839100	18.70	100.0
Total		4487855	100.0	-

If we combine the above mentioned categories then we find that 69.06 per cent villages are of small size (below 500 persons) having 30.98 per cent of rural population and 27.97 per cent villages are characterised as medium size (range 500-1999 persons) settlements having 50.32 per cent of rural population. The large size villages are few in number (3%) with 18.70 per cent population.

Thus we observe that in the region small size villages are numerically high (69.06%) with one third (30.98%) of the total rural population, besides, large number of people (50.32 per cent) are living in medium size villages of the region. For every large village there are more than nine medium size and about 23 small villages in Mewar. So, the small size villages dominate the scene of human settlements.

Spatial Distribution Pattern :

The spatial distribution pattern of settlement has been expressed here in the context of size class distribution and to quantify the character of such pattern over space in different selected sample areas of Mewar by using the technique of "near-neighbour distance". The sample areas were chosen in such a way that they are associated with various factors seems to be influencing the settlement pattern over space such as physical like hills, plains, riverine, natural vegetation, etc. and nearness to urban areas (Fig. 6.2 a to f). The sample areas are of uniform size under all the factors considered to be influencing the pattern of settlement.

The statistical analysis of the near neighbour measure, which is as the name suggests a straight line measurement of the distance separating any phenomenon and its nearest neighbour in space, was originally developed by plant ecologists who were concerned with the distribution pattern of various plant species over the surface of the earth.¹ The subsequent seminal studies on spacing of settlement were made by Dacy (1962), King (1961-62), Thomas (1961-62) and Browning and Gibbs (1961) were also based on the near neighbour analysis.

The near neighbour analysis indicates the degree to which any observed distribution of points deviates from what might be expected if the points were distributed in a random

1. Clark, P.J. and Evans, F.C. (1954) - "Distance to nearest neighbour as a measure of relationship in population". Ecology. PP. 445-53.

DISTRIBUTION OF RURAL SETTLEMENT PATTERNS

HILLS 45 $\frac{H}{10}$ R. 8G

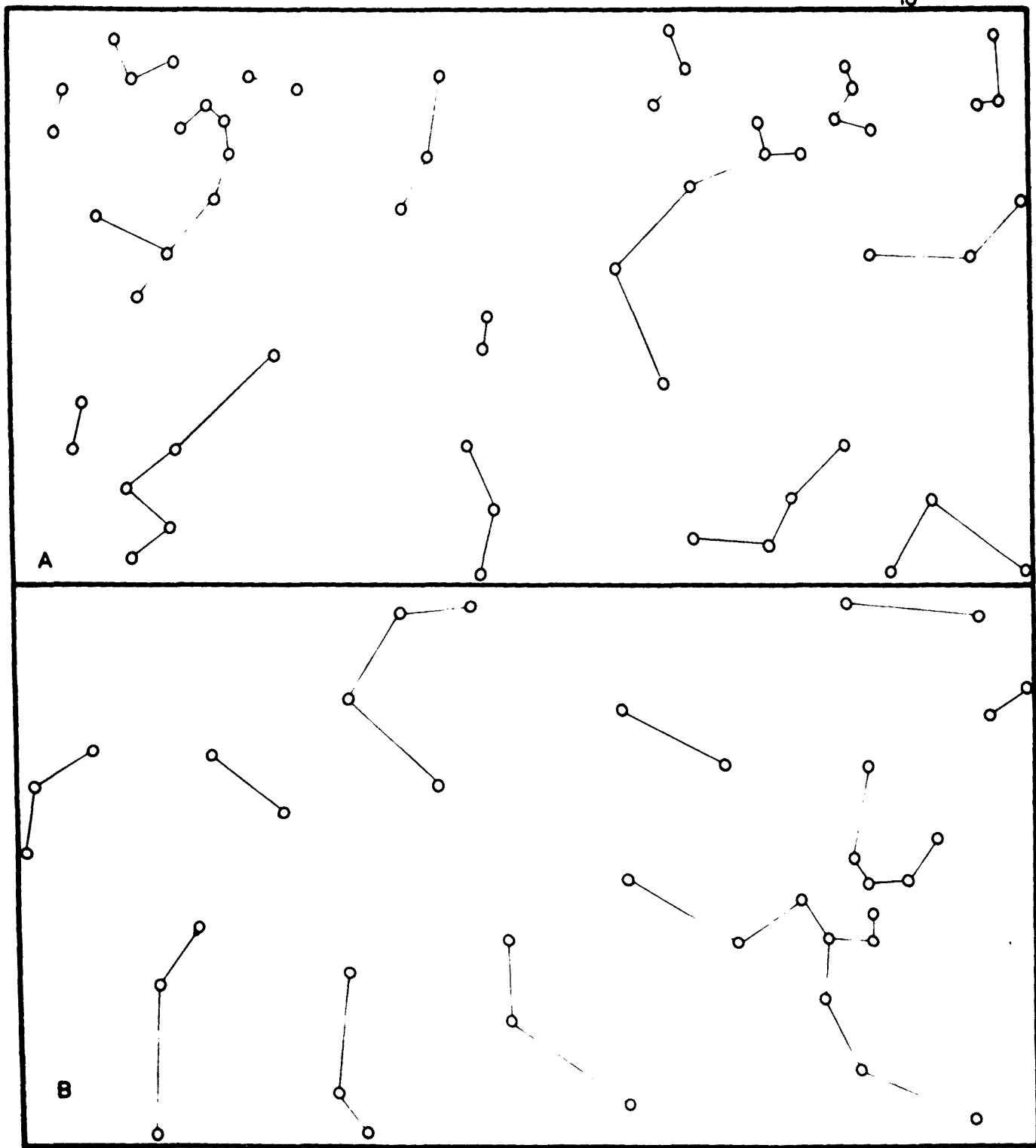


FIG. 6'2

RIVERINE 45 $\frac{K}{12}$ R. 111

manner within the same area. The random distribution of points is defined as a set of points on a given area for which any point has had the same chance of occurring on any sub-area of specified size has had the same chance of receiving a point as any other sub-area of that size, and that of the placement of each point has not been influenced by that of any other points.²

From the law of mathematical probability it has been demonstrated that the mean distance \bar{r}_e between each point and its nearest neighbour which could be expected in such a random distribution up to 2.15, which is expressive of uniform spacing analogous to Christaller's hexagonal arrangement. Thus, the ratios for various areas can be compared directly with one another and thereby provide a meaningful and precise expression of the distribution pattern of points within any area.

The "R" value shows the degree of departure from random to even or clustered distribution of settlements or it is the ratio of the observed mean distance of separation (\bar{r}_a) and the expected or theoretical mean distance of separation (\bar{r}_e) of the distribution.

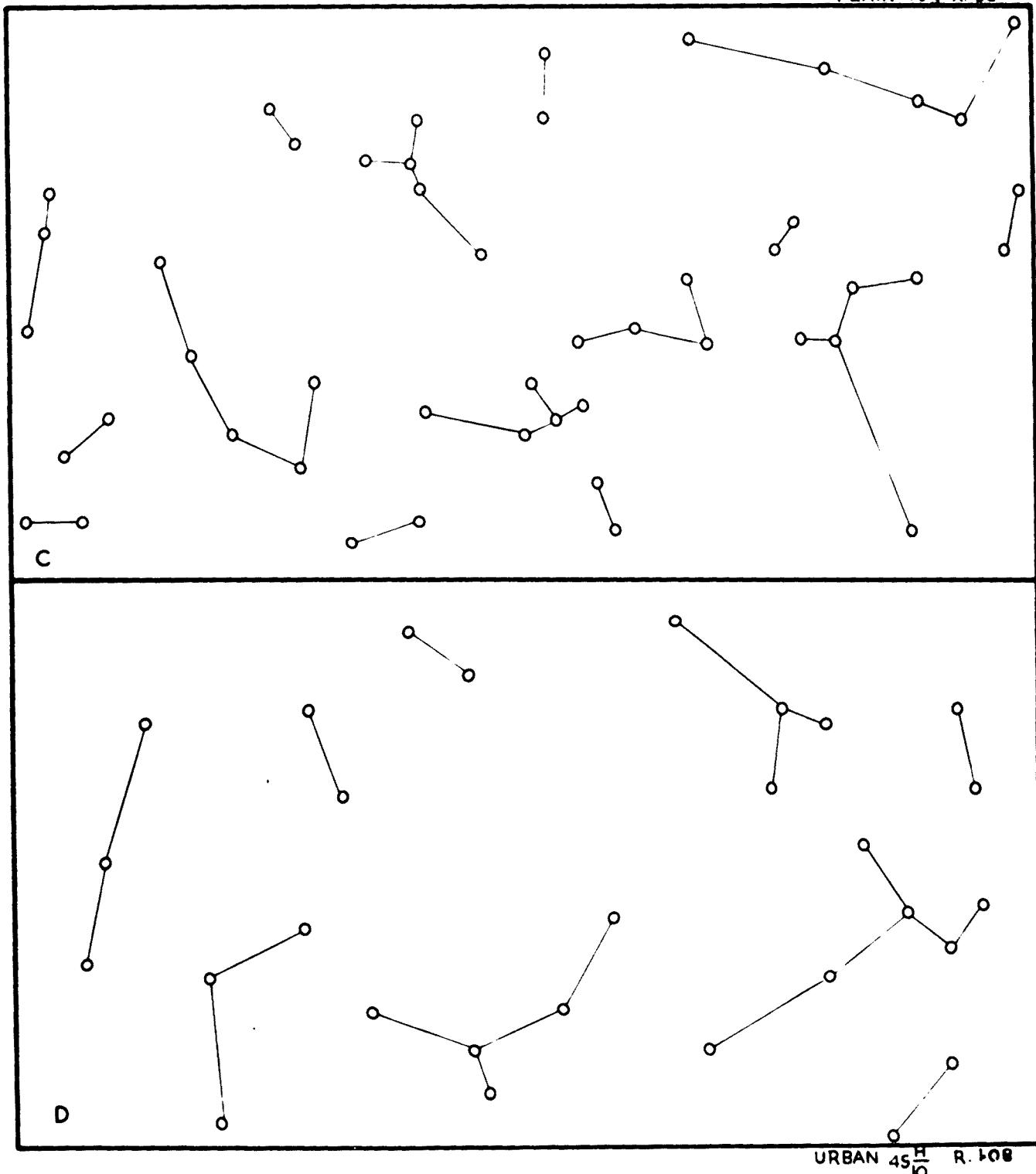
In case of our selected sample areas the "R" values have been obtained and presented in table 6.2. The foregoing table reveals that these values are near or equal to random nature of distribution.

The settlements of plain area ($r = .95$) shows a random

2. Ibid. pp. 446.

DISTRIBUTION OF RURAL SETTLEMENT PATTERNS

PLAIN 45° K R. 95



URBAN 45° H 10 R. 108

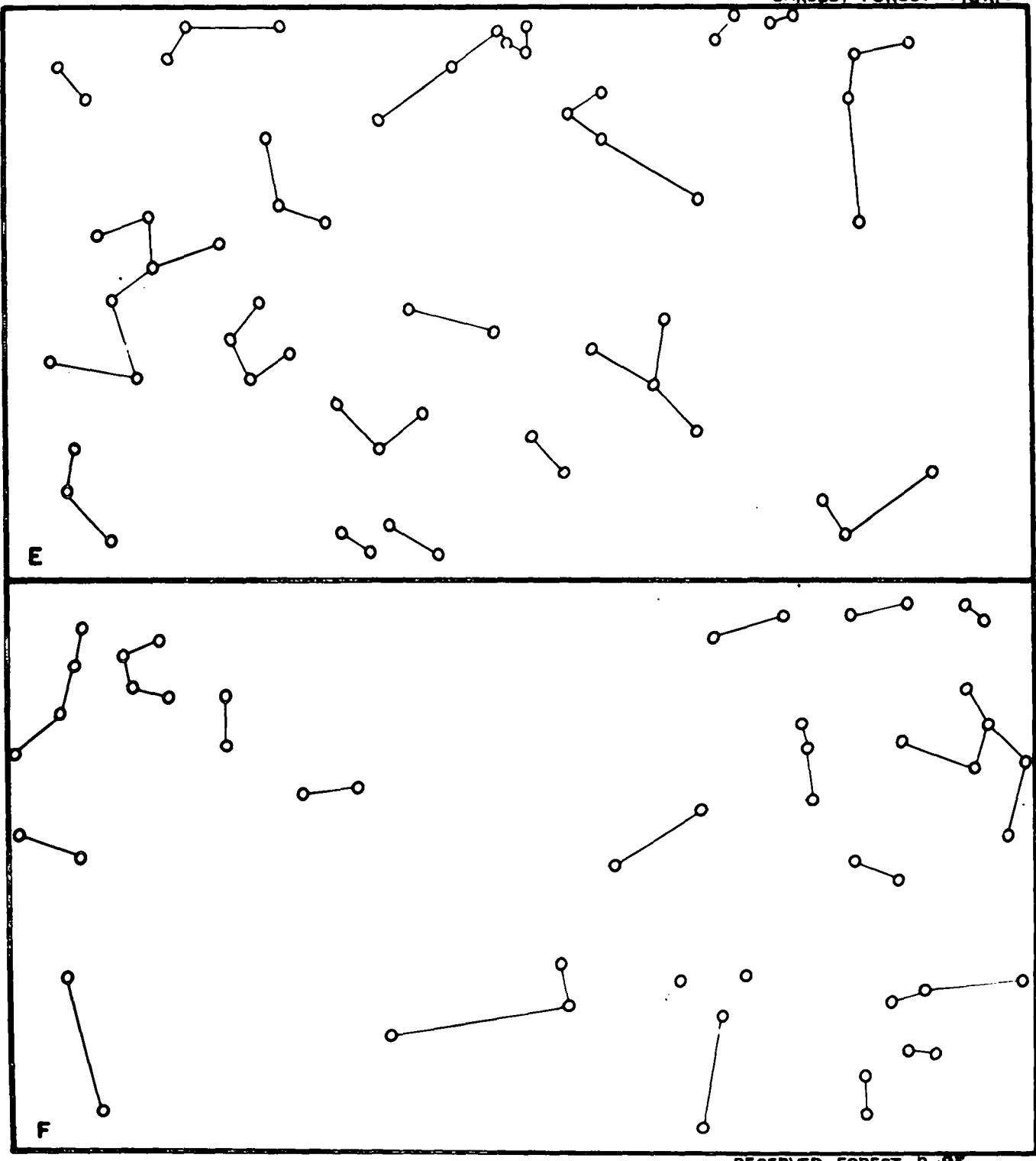
Table 6.2
Near-neighbour Statistics

Sample Areas	No. of Observations	Area in Miles ²	Mean observed distance (\bar{r}_o)	Expected "R" value (\bar{r}_e)	"R" Value	Nature of Pattern
Plains	48	960.0	2.11	2.22	0.95	Random
Hills	56	"	1.78	2.08	0.86	More cluster than random
Revines	38	"	2.77	2.50	1.11	Random
Shrubby Forests	58	"	1.72	2.04	0.84	More cluster than random
Reserved Forests	49	"	1.89	2.22	0.85	Random
Urban	29	47382.0 Sq.km.	3.08	2.86	1.08	Random
Larg Size Settlements	254	47382.0 Sq.km.	4.02	6.66	0.60	Aggregated

nature of distribution because the area from which samples have been selected is a vast plain of upper Banas basin. The hilly area ($r = .86$) shows a tendency of departure which is more cluster than random distribution; generally, they are small and medium size villages, having their sites either on foot hills or along the passes. The same nature of distribution observed in the areas which are surrounded by shrubby forests ($r = .84$) and reserved forests ($r = .85$). It is due to the fact that hilly areas and forested areas are simul-

DISTRIBUTION OF RURAL SETTLEMENT PATTERNS

K SHRUBBY FOREST 45 TGR. 84



teniously correlated with each other where settlement pattern has similar characteristics of spatial distribution. In case of ravines ($r = 1.11$) and urban influencing area ($r = 1.08$) the nature of distribution shows a random pattern.

Besides, above sample areas it is observed that the near neighbour distance of the large size (above 2000 persons) settlements of the whole region. The total settlements of this class are 268. The "R" value which has been worked out to be 0.60. It shows the aggregated nature of settlements. It is due to the fact that large size rural settlements are much more closer to the urban areas than small size villages. The distribution of large size settlements in Mewar are in a longitudinal shape particularly along the transport corridors emanating from urban centres toward another.

Chi-square Analysis :

Behind the spetial distribution of settlement, our hypothesis was that, the different kinds of environmental factors are playing their vital role to differentiate each from the other. Chi-square analysis (see table 3) has been made to test our hypothesis. The calculated value (13.07) of Chi-square is greater than the tabulated value (11.07) for 5 degrees of freedom at 5 per cent level of significance thus challenges our hypothesis. Thus we can conclude that the actual environmental conditions is significantly different from the theoretical distribution. Urban centres have greater influence on the rural settlement distribution while in other

physical environments people are free to locate.

Table 6.3
Chi-square Test*

S.No.	Factors affecting Rural Settlements	Observed no. of Settlements	Expected no. of Settlements E	$(D-E)^2$	$\frac{(D-E)^2}{E}$
				278/6=46.33	
1.	Plains	48	46	4	0.08
2.	Hills	56	46	10	2.10
3.	Revines	38	46	64	1.40
4.	Shrubby Forests	58	46	144	3.10
5.	Reserved Forests	49	46	9	0.19
6.	Around Urban Centre	29	46	289	6.20
Total 6th Observations		278	276	610	13.07

Size and Spacing of Rural Settlements :

To test of the hypothesis that small size settlements are more closely spaced, and as the size of the settlements increases the settlements tend to be spaced apart. The valuable attempts have been made toward this by A.B. Mukherjee to measure the spacing of rural settlements in Rajasthan⁴ and

$$* \text{ Chi-square} = \frac{(D-E)^2}{E}$$

Where - E stand for expected no. of dots.

D stands for no. of dots.

The degree of freedom : = n-1

$$= 6-1$$

$$= 5.0$$

4. Mukherjee, A.B. - "Spacing of rural settlements in Rajasthan" A spatial analysis. Geographical Outlook Vol I no.1 April 1970.

in Ganga Yamuna Doab.⁵ He assumed in his formula that the area around the rural settlements is a circle, and the area of the circle is the area covered by rural settlements from the total rural area of the tehsil. Although, he considered the rural area in his formula⁶ but it seems to be wrong because urban areas can not be excluded as the spacing is the areal expression of distance in a linear measurement over space. It also can be accepted again because rural settlements have no separate monopolistic dynasty over space and generally they are found in dupolystic supervision over space between rural and urban settlements.

Spacing of Rural Settlements :

The spacing within tehsils or region has been observed with the help of tehsilwise data for area and number of inhabited villages, using the formula (see foot note 6) given below. The average spacing of villages in the region is 2.58 kms. among 9011 inhabited villages. The tehsilwise results were arranged in descending order and divided them into four groups in a particular range and presented in Fig. 6.3. The figure reveals that the spacing of settlements is very high

5. Ibid. "Spacing of villages in Upper Ganga Yamuna Doab". Abstract. Geographical Review of India. Vol I 36 No. 2 June 1974. pp.155-64.

6. $S = 2X \frac{A}{N}$

Where S = Spacing in Kilometres

A = Rural area in sq. kms. but not in this study total area of the tehsil.

N = Number of inhabited villages.

M E W A R
Spacing Among Villages

DATA BASED UPON CENSUS 1971.

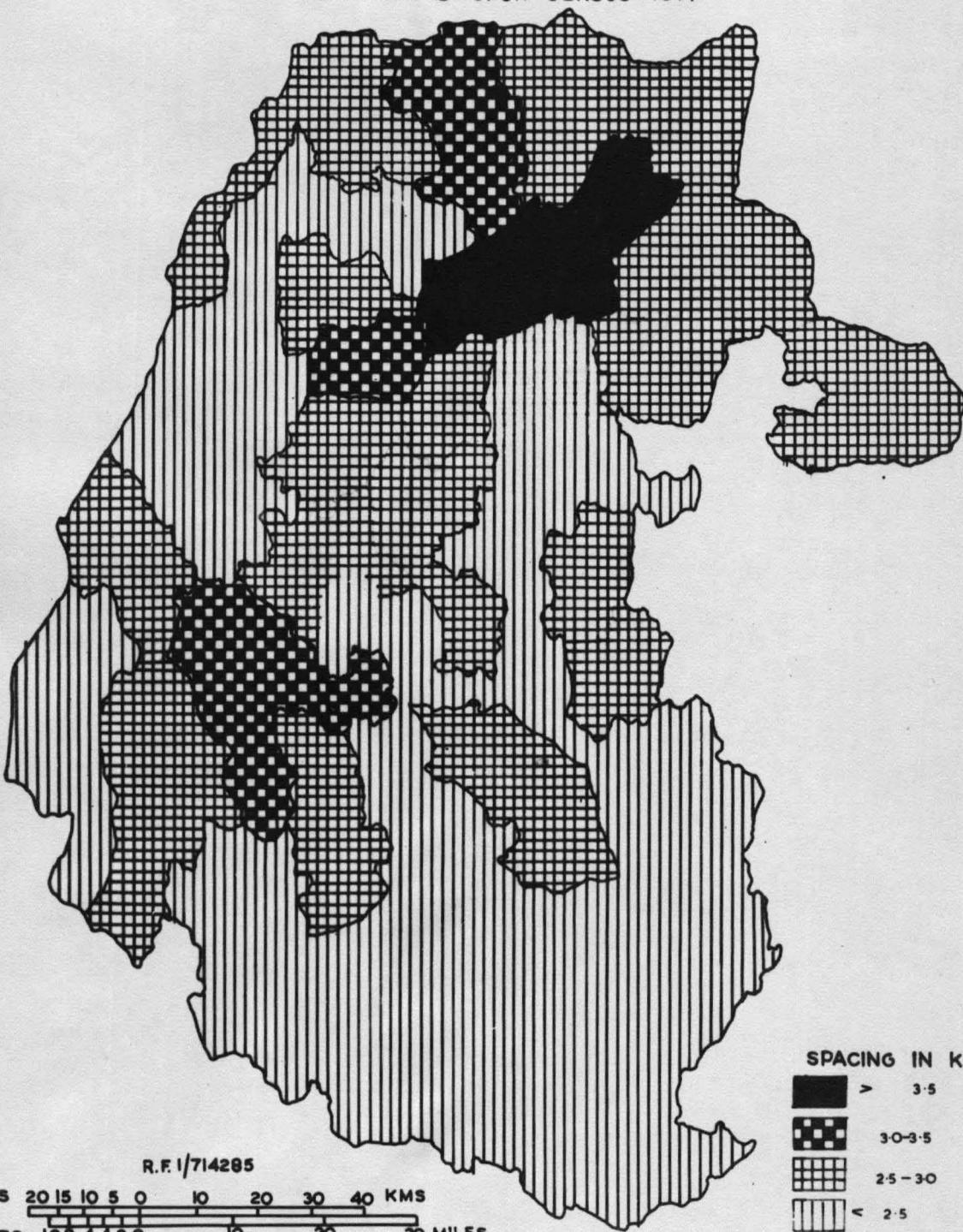


FIG. 6'3

(above 3.5 kms.) and high (above 3.0 kms.) in Kotri (3.92), Bhilwara (3.72), Hurda (3.44), Banera (3.26) and in Sahara (3.06), tehsils of Bhilwara district and in Girwa (3.12) tehsil of Udaipur district. The medium spacing which is between the range of 2.5 to 3.00 kilometres has been observed in the adjoining tehsils of the areas having large spacing, it covers the north western and eastern part of Bhilwara district extended upto the Begun (2.86) tehsil of Chittorgarh district. The area of medium spacing then make a corridor to join Sahara tehsil to Girwa tehsil. The tehsils which come under this category are Railmagra (2.80), Mavali (2.74), Rasmi (2.76), Kapasan (2.52) and Dungla (2.5) after crossing to the Girwa tehsil the strip covers Sarada (2.96), Phalasia (2.68) and Gogunda (2.72) tehsils. Besides, two small patches are found in Lasadia (2.56) and in Choti Sadri (2.56) tehsils. The low spacing (below 2.5 kms.) observed particularly in Bagar area in the southern part of the region, covering almost Dungarpur and Banswara districts and other remaining tehsils of the region.

Distribution of Mean Size of Villages :

The mean size of villages has been calculated to correlated to correlate them with spacing for analysing their size and spacing relationship that is to what extent size may govern to space. The data have been categorised into six parts viz. very high, high, medium high, medium, low and very low, and presented in Fig. 6.4. The corresponding figure reveals that very high and high mean size are found in a longi-

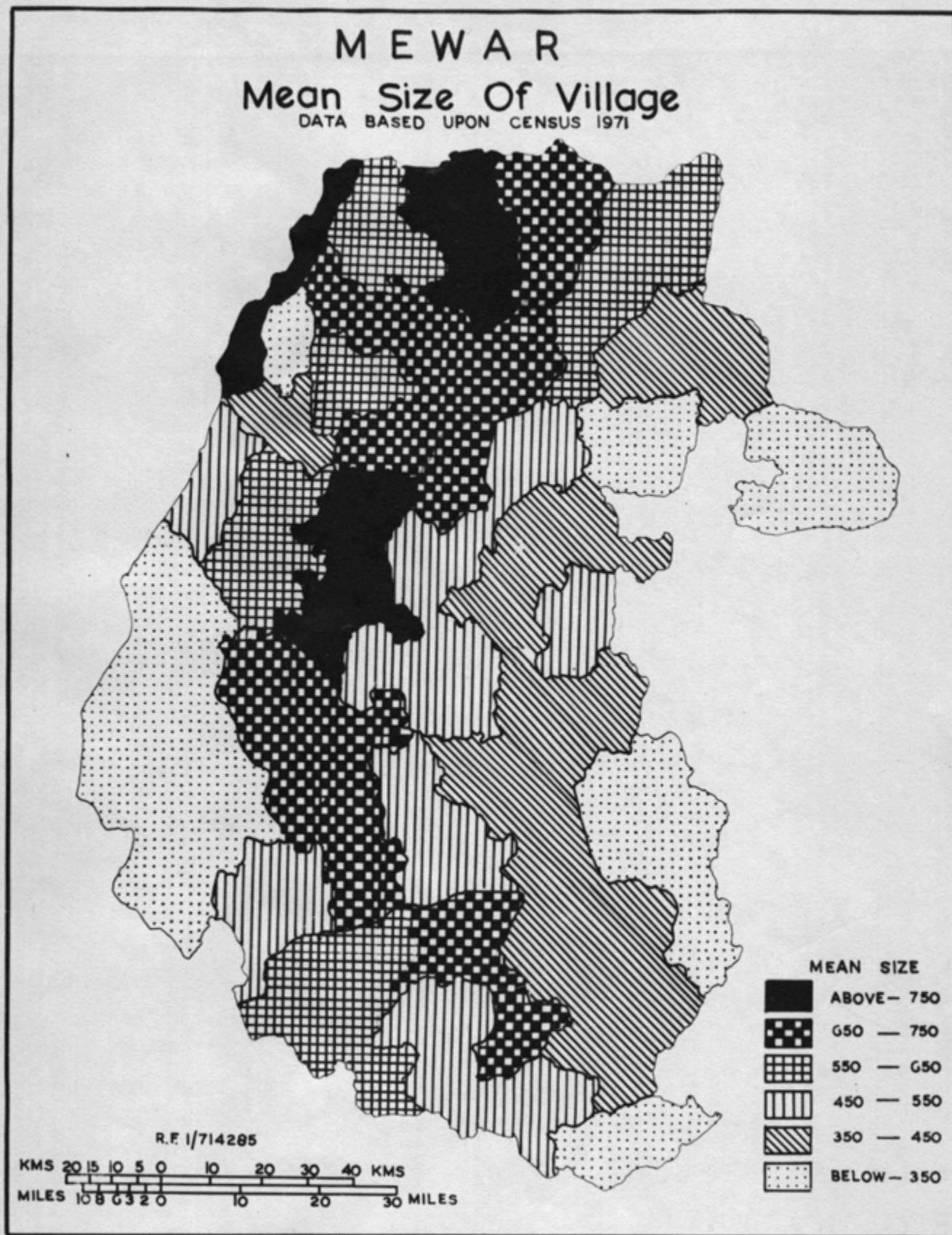


FIG. 6'4

tudinal curve like strip which extends from Hurda (855.99) tehsil of Bhilwara district in North to Garhi (702.60) tehsil in south. These villages by and large are associated with urban centres, further more they are not far away from the urban influences. The maximum mean size of this group is in Hurda and minimum in Shahpura tehsil. In case of medium high and medium range where the mean size is (between 450 to 650). They are found in the tehsils which are along or around the tehsils having high mean size settlements (see Fig. 6.4). The low and very low (below 450 persons) mean size villages are observed throughout Chittorgarh district as a whole and in the western part of Udaipur district covering Kotra (254.81), Phalasia (343.46), Deogarh (346.57), and Amet (413.13) tehsils and Banswara district except Garhi tehsil. The size of villages is largely determined by the topographic factors, social structure of the people, accessibility and the productivity of land. Hilly and dissected forested tracts have generally small size villages which are also dominated by the tribal population. The areas where resources are available and are accessible with open plain topography have high and medium size villages. The tracts inaccessible by road and railways, can not improve the size of the villages. The Bagar region, inspite of high density is characterised as inaccessible by the absence of railway and to some extent by road, having forested and undulating topography, inhabited by tribal community, have low mean size of settlements. These factors are also being influenced by the scatteration of population distribution.

Density Distribution of Rural Settlements :

The density⁷ of rural settlements (Fig. 6.5) reveals that it is high (above 25 villages) in the Bagar area of the region and also found in patches in Chittorgarh (27.06), Bhadesar (29.69) and in Bari Sadri (25.87) of Chittorgarh district and also some extent in Amet (25.30), and in Vallabh-nagar (25.74) tehsil of Udaipur district, but maximum density measured in Kushalgarh (37.44) tehsil in extreme south and minimum in Hurda (10.68) tehsil in north. Thus we could see that high density of rural settlement is found in Mewar, where mean size of the settlement is low, having low spacing with each other. The density of rural population is also high in the areas of high density. The moderate settlement density (range 20-25) is observed in the surrounding areas of high density. Such type of area covers Ghatol (23.30), Garhi (23.29), Aspur (20.99), Salumber (23.63), Partapgarh (22.26), Kumbhalgarh (20.74), Rajasmand (22.88), and Nathdwara (20.76), tehsil. Thus the moderate settlement density is particularly found in hilly areas of the region. In case of low (15 to 20) and very low (below 15) settlement density has been observed particularly in northern Mewar plain upto Sarada tehsil of Udaipur district. The minimum density observed at Hurda (10.68) tehsil in Bhilwara district. The settlements of this northern plain have high mean size of the villages, and are not close to each other within the respective tehsils but tend to space apart. Thus the area which have low density of settlements covers the whole Bhilwara district with Girwa.

7. The density of rural settlements refers to number of settlements per 100 sq. kilometres.

M E W A R
Density Of Rural Settlements
DATA BASED UPON CENSUS 1971.

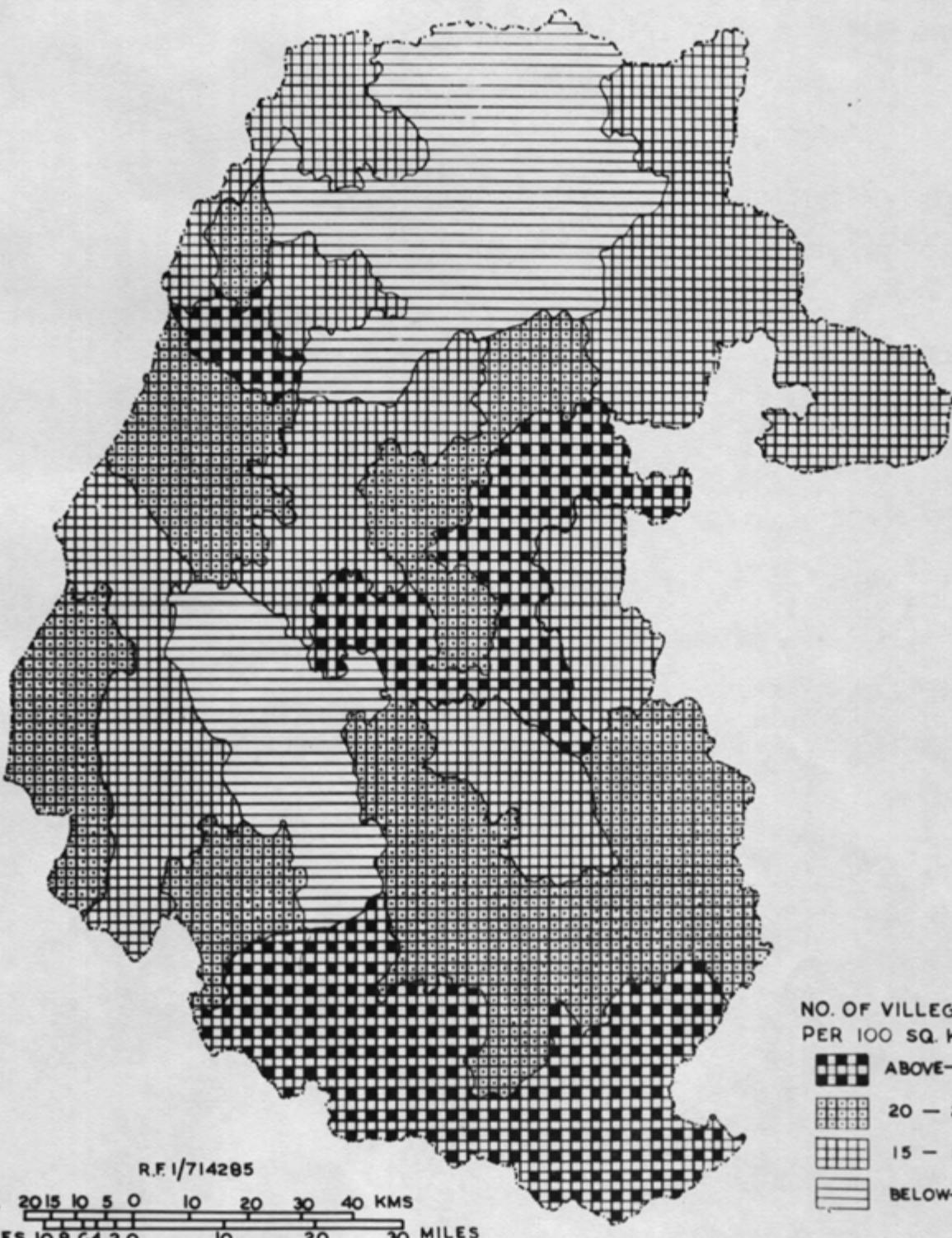


FIG. 6'5

Table 6.4
Size, Spacing and Density of Rural Settlement

S.No.	Distt/Tehsils	Total Villages	Total Area in Kms. ²	Spacing in kms.	Average size of Villages	No. of Villages per 1000 kms ²
(1) BHILWARA						
1.	Hurda	66	617.4	3.44	855.48	10.68
2.	Shahpura	130	1126.4	2.75	665.31	11.54
3.	Jahazpur	168	1083.6	2.86	546.89	15.50
4.	Mandal	162	1210.0	2.37	720.88	13.38
5.	Banera	81	677.0	3.26	788.03	11.96
6.	Bhilwara	123	961.9	3.72	724.51	12.78
7.	Raipur	88	517.6	2.72	606.92	17.00
8.	Sahara	92	652.1	3.06	693.52	14.10
9.	Kotri	127	930.3	3.92	644.52	13.65
10.	Mandalgarh	274	1539.4	2.66	410.16	17.79
11.	Asind	197	1134.6	2.70	622.16	17.36
(2) UDAIPUR						
1.	Bhim	93	577.2	2.80	793.16	16.11
2.	Deogarh	131	573.6	2.34	348.57	22.83
3.	Amet	137	535.1	2.22	413.13	25.30
4.	Kumbhalgarh	161	776.1	2.46	514.88	20.74
5.	Rajsamand	137	598.6	2.34	552.27	22.88
6.	Railmagra	90	558.8	2.80	756.95	16.10
7.	Nathdwara	195	939.2	2.46	574.13	20.76

contd.....

8.	Mavali	141	843.1	2.74	844.22	16.72
9.	Gogunda	148	871.4	2.72	561.99	16.98
10.	Vallabhnagar	265	1029.4	2.20	457.16	25.74
11.	Girwa	220	1686.2	2.12	684.37	13.04
12.	Kotri	301	1208.1	2.24	254.81	24.91
13.	Phalasia	254	1436.9	2.68	343.46	17.67
14.	Lasadia	235	1219.7	2.56	402.79	19.26
15.	Sarada	156	1083.4	2.96	726.68	14.93
16.	Salumber	219	926.5	2.30	456.47	23.63
17.	Kherwara	238	1089.3	2.42	520.45	21.38

(3) CHITTORGARH

1.	Rasmi	75	450.3	2.76	668.52	21.58
2.	Gangrar	156	722.8	2.42	452.13	15.51
3.	Begun	366	2358.7	2.86	320.43	27.06
4.	Chittorgarh	187	691.0	2.16	391.56	20.01
5.	Kapasan	180	899.4	2.52	515.01	29.69
6.	Rhadesar	161	542.2	2.06	369.57	17.88
7.	Nimbahera	149	833.3	2.60	457.48	19.29
8.	Choti Sadri	137	710.1	2.56	389.86	25.87
9.	Bari Sadri	132	510.1.	2.20	394.90	20.26
10.	Dungla	100	493.5	2.50	532.98	22.09
11.	Partapgarh	480	2172.3	2.40	313.02	

(4) DUNGARPUR

1.	Dungarpur	425	1572.3	2.16	569.99	27.03
2.	Aspur	140	666.9	2.44	689.73	20.99

contd....

3.	Sagwara	260	923.9	2.12	499.03	28.14
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(5) BANSWARA

1.	Ghatol	304	1304.4	2.32	434.49	23.30
2.	Garhi	165	708.3	2.32	702.60	23.29
3.	Banswara	321	1141.8	2.12	394.35	28.11
4.	Bagidora	259	858.9	2.04	499.50	30.15
5.	Kushalgarh	390	1041.6	1.84	301.04	37.44
<hr/>		<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	Regional	9011	47382	2.58	498.04	19.01

and Sarda tehsil of Udaipur district. The density of rural settlement is generally lower where size of them has a tendency to become larger and widely spaced and more regular in spacing. This characteristic of settlement size and spacing has been historically stable in the northern Mewar upto Udaipur which was under the control of Akbar and in modern time under Mewar residency.

Regression and Correlation Analysis :

To establish a quantitative relationship between two related variables in the form of equation, the regression analysis has been made. The variable which is to be predicted is known as dependent variable and is denoted by Y. The known variable is called the independent variable and is designated by S. In our case dependent variable (Y) is spacing and independent (X) is size of the settlement. These two variables are significantly correlated⁸ ($r = .60$). The calculated value of "t" is 5.02 for 45 degrees of freedom at 1 per cent level of significance. Thus these two variables are positively correlated with each other. An equation ($Y = 1.598 + .0018X$) has been found out after calculation which enables us to determine the value of (Y) spacing associated with the given value of X (size) but it also describes the effect of a change in the size (X) over spacing. Thus the regression

8. Correlation Coeff: $r = \frac{\sum xy - (\bar{x})(\bar{y})}{\sqrt{\frac{\sum x^2 - (\bar{x})^2}{n} \frac{\sum y^2 - (\bar{y})^2}{n}}}$

Where n = no. of observations

$$\bar{x} = \frac{\sum x}{n}, \bar{y} = \frac{\sum y}{n}$$

contd....

MEWAR
REGRESSION ANALYSIS OF SIZE & SPACE
NO. OF OBSERVATIONS 47
 $R = 0.61$ RURAL SETTLEMENT

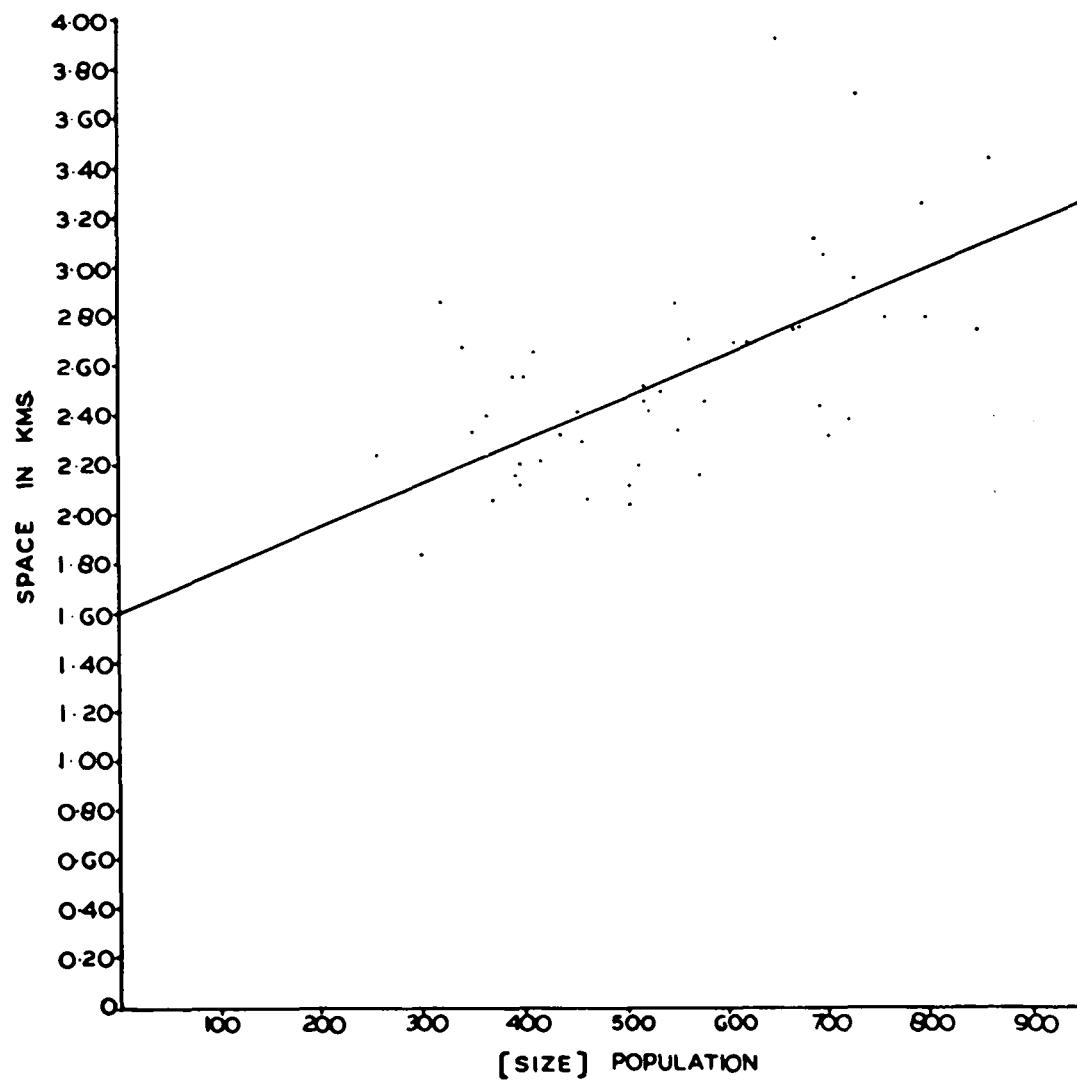


FIG. 6·6

co-efficient of X (size) indicates the change in the value of spacing (Y) by one unit change in size (X). The value of Y increases by .0018 units as the value of X increased by 1 unit. The result reveals that the small size settlements have a tendency to be more closely spaced, as the size of the settlements increases the settlements tend to be spaced apart. The clustering of settlements is more pronounced in the high density areas of them as in the Bagar plain (Banswara) and Dungarpur district.

Urban Settlement :

The rural-urban dichotomy is more significant in Mewar, a region of having very low urban development. The urban settlements need a special treatment particularly with respect to their structural aspects. The basic fundamentals of settlement structure viz. their size, spatial distribution and economic base with respect to their growth are analysed. The decadal growth of urban centres and their rank-size relationship have been viewed from some empirical analytical techniques and concepts point of view (Fig.) to test their spatial regularity and patterning. Second aspect of this ensuing study is based on spatial analysis from the point of view of near neighbour distance and explain the distribution pattern of towns over the region. So far as the economic base of urban settlements is concerned, we are going to

contd....

x = size
y = space

$$\begin{aligned} \text{Degree of freedom} &= n-2 \\ &= 47-2 \\ &= 45.0 \end{aligned}$$

emphasize particularly on the basis of functional qualification primarily based on Nelson's design of classification.

Size of the Urban Settlements :

The population census 1971 mentioned 21 urban centres in Mewar 20 towns and one city comprising only 10.04 per cent of total population of about 5 million in only 1.05 per cent of the total area 47 thousand Km.² of the region.

There is only one lakh city (Udaipur) or first category urban place with a population about 1.6 lakhs. Bhilwara (82155) is the second town falls in class II while there are two more in class III Chittorgarh (25917) and Banswara (27350). There are eight towns in size class IV (10,000-25,000) viz. Shahpura (15334), Nathdwara (198893), Rajaamand (14242), Par-tapgarh (19781), and Sagwara (111484), respectively. Finally, there are nine towns which come in size class V (5000-10,000) viz. Gangapur (9504), Bhiner (9860), Salumber (8888), Deogarh (8738), Choti Sadri (9620), Bari Sadri (9138), Begun (8348), and Kushalgarh (5841), and Jahazpur (9313). There is no class VI town in the region which is generally the case of the developed region.

Rank Size Rule :

The rank size rule⁹ is an investigative hypothesis, a theoretical model or a norm to express the relationship of

9. $r_n (p_{q_n}) = K$ Where r_n and p_n are the rank and the population of the urban settlement respectively in the series when all the towns of a region are arranged in a descending order of population size and q and k are constants for a given group of urban settlements.

observed regularity in the city size. The hypothesis behind it is that the cities are related to each other in some orderly way forming into a system, the basis for which is the population size. There has to be some sort of relationship between the size of the towns and their rank. Thus to test the above hypothesis the rank size rule has been applied among the urban settlements of Mewar¹⁰ for 1971, 1961 and 1951 and also to see what sort of pattern is empirically existent in Mewar if it does not fit to the rule.

Evolution of the Hypothesis :

Von Thunen's (1926) theory of Agricultural location, Pareto's law of income distribution, Weber's (1919) theory of industrial location, Jefferson's (1939) law of primate city, Christaller's (1933) and Losch's (1939) central place theory etc. have contributed to the evolution of this hypothesis. The concept of rank-size rule is the product of the present century, Auerbach (1913) was the first to record the existence of regular relationship between the size of the cities and their ranks. Singer (1936) found that Pareto's law explains city size distribution in some cases, but the concept has been popularised against Zipf (1949).

Urban Rank-size Relationship :

The rank-size regularity among the urban settlements of Mewar has been found out. The expected population of the premier city (in our case Udaipur) is calculated by dividing the total population of all the urban settlements of the

region with sum of the reciprocal of their ranks. As a result, the double log graph on which we plotted the actual population of urban centres is not showing a regularity with the theoretical or expected population with respect to their ranks. In case of 1971-rank-size relationship the first and second ranked urban centres, namely Udaipur (161278) and Bhilwara (82155) are larger than their expected size viz. 137.313 and 68657 respectively. The medium size towns (10,000 to 50,000 population) which fall within third to eight ranks and from eleven to thirteenth ranks (namely Banswara (27363), Chittorgarh (25917), Dungarpur (19773), Nathdwara (18897), Partapgarh (17402), Nimbahera (16542), Sagwara (11484) and Kapasan (10907) show less population than their expected population except Shahpura (15334) and Rajsamand (14242), which are close to their theoretical size.. However all small size towns (population less than 10,000) are above their expected size. The respective towns are Gangapur, Jahazpur, Bari Sadri, Salumber, Deogarh and Begun, except Bhinder, Choti Sadri and Kushalgarh.

In 1961 the only first rank city (Udaipur) and small size towns are larger than their expected size, while medium size towns were below their theoretical size, except Shahpura, Nimbahera and Rajaamand. (Table 6.8). In the same way 1951 year reveals that only first rank city and the small size towns are larger than their expected population except Bhinder and Choti Sadri which were close to their expected size. Thus from the above study it may be concluded that the urban centres

Table 6.5
 Distribution of Urban Settlements in Various Size Classes
 in Mewar (1901-71)

S.No.	Size Class	1971	1961*	1951	1941	1931	1921	1911	1901
I	Above 100000	1	1	-	-	-	-	-	-
II	50,000-100000	1	-	1	1	-	-	-	-
III	25000-50000	2	1	1	1	1	1	1	1
IV	10000-25000	8	8	6	2	3	1	1	1
V	5000-10000	9	9	16	13	10	9	7	10
VI	Below 5000	-	-	9	7	8	10	12	6
		21	19	33	24	22	21	21	18

* In 1961 definition of the towns changed and two towns declassified namely Begun and Jahazpur.

Table 6.6
Mewar-Rank-Size Relationship
(1971)

Rank (R)	Urban Centres	Reciprocal of R(1/R)	Actual Popu- lation (Pa)	Expected Popu- lation (Pe)	Popu-Difference d=Pa-Pe	Percentage diff- ference 100d/Pe
1.	Udaipur	1.00000	161278	137313	23965	17.45
2.	Bhilwara	0.60000	82155	68657	13498	19.66
3.	Banswara	0.33333	27363	45771	-18408	-40.21
4.	Chittorgarh	0.25000	25917	34328	- 8411	-24.50
5.	Dungarpur	0.20000	19773	27463	- 7690	-28
6.	Nathdwara	0.16666	18893	22886	- 3993	-17.44
7.	Partapgarh	0.14280	17402	19616	- 2214	-11.28
8.	Nimbahera	0.12500	16542	117164	- 622	- 3.62
9.	Shahpura	0.11111	15334	15257	77	.50
10.	Rajsamand	0.10000	14242	13731	511	3.72
11.	Sagwara	0.09090	11484	12483	- 999	- 8
12.	Kapasan	0.8333	10907	11443	- 536	- 4.68

contd.....

contd.. Table 6.6

13.	Bhinder	0.70692	9860	10563	- 703	- 6.65
14.	Choti Sadri	0.07142	9620	9808	- 188	- 1.91
15.	Gangapur	0.06666	9504	9154	350	3.82
16.	Jahazpur	0.06250	9313	8582	731	8.51
17.	Bari Sadri	0.05882	9138	8077	1061	13.13
18.	Salumber	0.05555	8888	7629	1259	16.50
19.	Deogarh	0.05263	8738	7227	1511	20.90
20.	Begun	0.05000	8348	6866	1482	21.58
21.	Kushalgarh	0.04761	5841	6539	- 698	-10.67

Total	1/R/3.64524	Pa500540	Pe 500557
Average	0.17358	23835	23836

Table 6.7
Mewar-Rank-Size Relationship (1961)

Rank (R)	Urban Centre	Reciprocal of $R(1/R)$	Actual Pop- (Pa)	Expected (Pe)	Popu-Difference Pa-Pe	% difference $100d/Pe$
1.	Udaipur	1.00000	111139	95100	16039	16.86
2.	Bhilwara	0.50000	43499	47550	-4051	-8.51
3.	Banswara	0.33333	19566	31700	-12194	-38.46
4.	Chittorgarh	0.25000	16888	23775	-6887	-28.96
5.	Partapgarh	0.20000	14573	19020	-4447	-23.38
6.	Nathdwara	0.16666	13890	15850	-3960	-24.98
7.	Dungarpur	0.14280	12775	13586	-811	5.9
8.	Shahpura	0.12500	12165	11888	277	2.3
9.	Nimbahera	0.11111	11655	10567	1088	10.2
10.	Rajsamand	0.10000	11272	9510	1762	18.5
11.	Sagwara	0.09090	8655	8645	10	0.1
12.	Kapasan	0.8333	8371	7925	454	5.7
13.	Bhinder	0.7692	8282	7315	532	7.2

contd.....



contd.. Table 6.7

14.	Choti Sadri	0.07142	8265	6793	1472	21.6
15.	Deogarh	0.06666	8032	6340	1692	26.6
16.	Bari Sadri	0.06250	7937	5944	1983	33.3
17.	Gangapur	0.05882	7769	5594	2175	38.8
18.	Salumber	0.05555	7384	5283	2101	39.7
19.	Kushalgarh	0.05263	5264	5005	259	5.1
Total		3.54763	337381	337380		
Average		.18671	17756.89	17756.84		

Table 6.8
Mewar-Rank-Size Relationship (1951)

Rank S.	Urban Centres	Recipocal of R (1/R)	Actual Pop. (Pa)	Expected Pop. (Pe)	Difference (Pa-Pe)	% difference 100d/Pe
1.	Udaipur	1.00000	89621	77898	11723	15.04
2.	Bhilwara	0.50000	35761	38949	-3188	-8.18
3.	Banswara	0.33333	15558	25966	-10408	-40.08
4.	Partapgarh	0.25000	14568	19475	-4907	-25.19
5.	Nathdwara	0.20000	12341	15580	-3239	-20.78
6.	Chittorgarh	0.16666	11863	12983	-1120	-8.62
7.	Shahpura	0.14280	11609	11128	481	4.32
8.	Nimbahera	0.12500	10585	9737	848	8.70
9.	Dungarpur	0.11111	9814	8655	1159	13.39
10.	Bhinder	0.10000	7317	8890	-1573	-6.07
11.	Choti Sadri	0.09090	6976	7082	-106	-1.49
12.	Kapanan	0.08333	6883	6492	391	6.02
13.	Deogarh	0.07692	6872	5992	880	14.68

contd.....

contd... Table 6.8

14.	Bari Sadri	0.07142	6851	5564	1287	23.13
15.	Sagwara	0.06666	6673	5193	1480	28.49
16.	Salumber	0.06250	5876	4869	1007	20.68
17.	Rajsamand	0.05882	5432	4582	850	18.55
18.	Begin	0.05555	5428	4328	1100	25.41
19.	Gangapur	0.05263	5097	4100	997	24.31
20.	Jahazpur	0.05000	4297	3895	402	10.32
21.	Kushalgarh	0.04761	4127	3709	418	11.26
<hr/>		Total	3.64524	283549.00	283967.00	
<hr/>		Average		13502.33	13522.23	

are not showing their rank size regularity¹¹ during the last three decades and there is no noticeable change in the tendency of their relationship. More over we can mention that the population of large and small urban centres is gradually increasing but the role of medium size towns in the growth of population is static thus not in par with the rank size relationship.

Primacy of the Premier Powers:

Primacy is the degree of lead that the largest city is enjoying over the other smaller cities or towns of a region. It is expressed as a ratio in term of how many times the largest city is bigger than its subordinates. In Mewar premier city is Udaipur and had always been so since 1901 upto date.

Fluctuation in Ranks :

The fluctuation in the respective ranks has been measured from 1901 to 1971. The table 6.10 reveals that the first and second rank urban centres are static or constant in their respective ranks since 1901 to date. The maximum fluctuation of ranks has been recorded in Dungarpur, Choti Sadri and in Deogarh at 7 times excluding pERSISTENT ranks. It means that the ranks of the small towns always fluctuated. The minimum fluctuation in ranks has been recorded in Banswara and Partapgarh only three times during past seventy years.

11. Zipf, G.K. (1949) "Human behavior and principle of least efforts" (Cambridge. Addison-Wesely Press), but this model has been revised by Stewart, J.Q. Empirical Methametical rules, concerning the distribution and equilibrium of population". Geographical Review XXXVII. pp. 461-85 (1947).

Table 6.9
Index of Primacy (1971) of Six Large Towns of Mewar
1971

1971

Rank of Urban Centres (R)	Actual Population (Pa)	Index of Primacy Observed	Index of Primacy Expected	Deviation	Expected Population (Pe)	Index of Primacy Corresponding to Pa ₁	Deviation
1. Udaipur	Pa ₁ = 161278	--	--		Pe ₁ 137313	Pe ₁ /Pe ₂ =2.09	0.09
2. Bhilwara	Pa ₂ = 82155	Pa ₁ /Pa ₂ =1.96	2.0	-0.04	Pe ₂ 68657	Pe ₁ /Pe ₂ =2.09	0.09
3. Banswara	Pa ₃ = 27363	Pa ₁ /Pa ₃ =5.90	3.00	2.90	Pe ₃ 45771	Pe ₁ /Pe ₃ =3.0	0
4. Chittorgarh	Pa ₄ = 25917	Pa ₁ /Pa ₄ =6.20	4.0	2.20	Pe ₄ 34328	Pe ₁ /Pe ₄ =4.0	0
5. Dungarpur	Pa ₅ = 19773	Pa ₁ /Pa ₅ =8.20	5.0	3.20	Pe ₅ 27463	Pe ₁ /Pe ₅ =5.09	0.09
6. Nathdwara	Pa ₆ = 18893	Pa ₁ /Pa ₆ =9.0	6.0	3.0	Pe ₆ 22886	Pe ₁ /Pe ₆ =6.09	0.09

1961

1. Udaipur	Pa ₁ = 111139	--	--	--	Pe ₁ 95100	--
2. Bhilwara	Pa ₂ = 43499	Pa ₁ /Pa ₂ =2.55	2.0	.55	Pe ₂ 47500	Pe ₁ /Pe ₂ =2.002 .002
3. Banswara	Pa ₃ = 19566	Pa ₁ /Pa ₃ =5.68	3.0	2.68	Pe ₃ 31700	Pe ₁ /Pe ₃ =3.000 0

contd.....

14
5
8

contd.. Table 6.9

4. Chittorgarh $P_{a_4} = 16888$	$P_{a_1}/P_{a_4} = 6.58$	4.0	2.58	$P_{e_4} 23775$	$P_{e_1}/P_{e_4} = 4.000$	0
5. Partapgarh $P_{a_5} = 14573$	$P_{a_1}/P_{a_5} = 7.63$	5.0	2.63	$P_{e_5} 19020$	$P_{e_1}/P_{e_5} = 5.00$	0
6. Nathdwara $P_{a_6} = 13890$	$P_{a_1}/P_{a_6} = 8.0$	6.0	2.00	$P_{e_6} 15850$	$P_{e_1}/P_{e_6} = 6.00$	0

1951

1. Udaipur $P_{a_1} = 89621$	--	-	---	$P_{e_1} 77898$	--	-
2. Bhilwara $P_{a_2} = 35761$	$P_{a_1}/P_{a_2} = 2.50$	2.0	0.5	$P_{e_2} 38949$	$P_{e_1}/P_{e_2} = 2.0$	0
3. Banswara $P_{a_3} = 15558$	$P_{a_1}/P_{a_3} = 5.76$	3.0	2.76	$P_{e_3} 25966$	$P_{e_1}/P_{e_3} = 3.0$	0
4. Partapgarh $P_{a_4} = 14568$	$P_{a_1}/P_{a_4} = 6.15$	4.0	2.15	$P_{e_4} 19475$	$P_{e_1}/P_{e_4} = 3.99$	0.01
5. Nathdwara $P_{a_5} = 12341$	$P_{a_1}/P_{a_5} = 7.26$	5.0	2.26	$P_{e_5} 15580$	$P_{e_1}/P_{e_5} = 4.99$	0.01
6. Chittorgarh $P_{a_6} = 11863$	$P_{a_1}/P_{a_6} = 7.55$	6.0	1.55	$P_{e_6} 12983$	$P_{e_1}/P_{e_6} = 6.0$	0

Table 6.10
Fluctuation of Ranks (1901-1971)

S.No.	Urban Centres	1971	1961	1951	1941	1931	1921	1911	1901
1.	Udaipur	1	1	1	1	1	1	1	1
2.	Bhilwara	2	2	2	2	2	2	2	2
3.	Banswara	3	3	3	4	4	5	5	7
4.	Chittorgarh	4	5	6	7	8	7	6	6
5.	Dungarpur	5	7	9	8	6	8	7	8
6.	Nathdwara	6	6	5	6	7	5	9	5
7.	Partapgarh	7	5	4	3	3	3	3	3
8.	Nimbahera	8	9	8	9	9	10	15	9
9.	Shahpura	9	8	7	5	5	6	4	4
10.	Rajsamand	10	10	17	-	-	-	-	-
11.	Sagwara	11	11	15	11	12	9	13	-
12.	Kapanan	12	12	12	12	15	-	-	-
13.	Bhinder	13	13	10	10	10	11	10	11
14.	Choti Sadri	14	14	11	13	11	13	11	12

contd.....

contd.. Table 6.10

15.	Gangapur	15	17	19	-	-	-	-	-
16.	Jahazpur	16	D	20	18	17	16	16	15
17.	Bari Sadri	17	16	14	15	-	-	-	-
18.	Salumber	18	18	16	16	14	14	12	13
19.	Deogarh	19	15	13	14	13	12	8	10
20.	Begin	20	D	18	17	16	15	14	14
21.	Kushalgarh	21	19	21	19	18	17	17	-

Note:D' Declassified

Growth of Population (A town level analysis) :

As Prof. Davis suggested, that there are two ways of measuring the urban growth, firstly by, "Instantaneous method" and secondly by the "continuous method". The former means ascertaining the population in all urban categories and tracing the changes in each class with-out taking into consideration individual city or town that make a class. It shows the changing distribution of urban population by class or cities, and the latter shows that what is happening to specific cities or towns as a result of their initial size difference. Thus taking first suggestion into consideration, the analysis has been made to interpret the growth of population for selected towns.

Bhilwara :

It is situated in the northern part of the region, having suitable position in plain area of northern Mewar. It shows a very high rate in the absolute growth of population, perticularly during last forty years. In 1941, it was class IV town and was class III town in 1951 with +95.58 per cent growth and remained in the same position in 1961, but population increased by about 46.62 per cent; again in 1971, the class of the town changed and became II class town with 88.86 per cent growth over 1961. The reason behind its high growth can be traced in industrialisation. The average decadal variation before and after independence was 28.85 and 67.74 per cent respectively.

Shahpura :

It is the second large urban concentration in Bhilwara district but it showed only normal increase in population and seems no external factor has influenced its growth. (Fig.7). The Shahpura was V class town upto 1941 and became class IV town in 1951; since then it is in the same class. The average decadeal variation before Independence was 5.75 per cent but after independence it became 15.42 per cent. The slow growth may also be due to loss of population as the economic base is poor. Many people may have outmigrated from the town to other parts of the region.

Udaipur :

It is the only one city of the region and was recognised as city in 1961. The growth of population of Udaipur shows a continuous increasing trend during last 70 years. The highest decadal variation recorded during 1941 to 1951 (50.25%) and also during 1961 to 1971 which was about 45.11 per cent. The average growth before and after independence is just double.

Nathdwara :

It is a religious town of the region situated north of Udaipur city. The highest growth took place during 1911 to 1921 to get same positionas was in 1901. It was class V town upto 1941 and became class IV town in 1951, since then it is in same class. The fluctuating but slow growth has made it a stagnating town and shows every sign of outmigration.

Chittorgarh :

Chittorgarh was a frontier of Hindustan and was great kingdom during medieval period; at present it is only a historical site for travellers. The population of the town was by and large constant from 1901 to 1941 when it was recognised as class V town. The population of the town also decreased like others in 1911 (-3.44). From 1951 (27.56) the town shows an increasing trend in the growth of absolute population, upto date. The decadal variation was 42.36 per cent in 1961 and 53.46 per cent in 1971.

Banswara :

The growth of Banswara town in terms of its population size is not high but it shows a gradual trend of increasing population. It was class V town upto 1921 and became class IV town in 1931 and was static in the same position upto 1961. In 1971, it was recognised as a class III town, having population 27350. The population of Banswara did not decline like other towns of the region.

Dungarpur :

It is the second important town of the southern part of the region. The population size during early fifties shows constant increase without any negative growth. It was class V town since 1901 to 1951 and became class IV town in 1961. The highest decennial variation was been during the last decade recording about 55.08 per cent.

Table 6.11
Growth of Towns Size Since 1901 to 1971

S.No.	Distt/Towns	Years	Total Popula-tion	Class	Decinial growth in %	Average growth in % before & after 1951
(1) <u>BHILWARA</u>						
1.	Bhilwara	1901	10346	IV	--	--
2.		1911	8763	V	-15.30	
		1921	9100	V	+ 3.85	
		1931	10402	IV	+14.31	
		1941	15169	IV	+45.83	28.85
		1951	29668	III	+95.58	
		1961	43499	III	+46.62	
		1971	82155	II	+88.86	67.74
2.	Shahpura					
		1901	8974	V	--	
		1911	7929	V	-11.64	
		1921	8296	V	+ 4.63	
		1931	9298	V	+12.08	
		1941	9939	V	+ 6.89	5.75
		1951	11609	IV	+16.80	
		1961	12165	IV	+ 4.79	
		1971	15334	IV	+26.05	15.42
3.	Gangapur					
		1951	5097	V	--	
		1961	7769	V	+52.42	
		1971	9504	V	+22.33	37.37

contd.. Table 6.11

4. Jahazpur	1961	D E C L A S S I F I E D			
	1971	9313	IV	--	-
(2). UDAIPUR					
1. Udaipur	1901	45976	III	--	--
	1911	33229	III	-27.73	
	1921	34789	III	+ 4.69	
	1931	44035	III	+26.58	
	1941	59648	II	+35.46	17.85
	1951	89621	II	+50.25	
	1961	111139	I	+24.01	
	1971	161278	I	+45.11	34.56
2 Nathdwara					
	1901	8591	V	--	
	1911	5424	V	-36.86	
	1921	8524	V	+57.15	
	1931	8506	V	- 0.21	
	1941	9704	V	+14.08	12.26
	1951	12341	IV	+27.17	
	1961	13890	IV	+12.55	
	1971	18893	IV	+36.01	24.28
3. Bhinder					
	1901	5172	V	--	
	1911	4630	VI	-10.48	
	1921	5069	V	+9.48	
	1931	5651	V	+11.48	
	1941	6443	V	+14.02	7.61

contd.....

contd.. Table 6.11

	1951	7317	V	+13.57	
	1961	8282	V	+13.19	
	1971	9860	V	+19.05	
4. Salumber					
	1901	4692	VI	--	
	1911	4504	VI	- 3.96	
	1921	4399	VI	- 2.37	
	1931	4691	VI	+ 6.64	
	1941	5257	V	+12.07	4.83
	1951	5876	V	+11.77	
	1961	7384	V	+25.66	
	1971	8888	V	+20.36	23.01
5. Deogarh					
	1901	5384	V	--	
	1911	5461	V	+ 1.43	
	1921	4885	VI	-10.55	
	1931	5082	V	+ 4.03	
	1941	5742	V	+12.99	5.51
	1951	6872	V	+19.68	
	1961	8032	V	+16.88	
	1971	8738	V	+ 8.78	12.83
6. Rajsamand					
	1951	5432	V	--	
	1961	11272	IV	+107.51	
	1971	14242	IV	+26.34	66.92

contd.....

contd... Table 6.11

(3) CHITTORGARH

1.	Chittorgarh	1901	7593	V	--	
		1911	7332	V	- 3.44	
		1921	18015	V	+ 9.32	
		1931	80141	V	+ 0.32	
		1941	9300	V	+15.66	9.88
		1951	11863	IV	+27.56	
		1961	16885	IV	+42.36	
		1971	25917	III	+53.46	47.91
2.	Partapgarh	1901	9819	V	--	
		1911	8329	V	-15.17	
		1921	9182	V	+10.24	
		1931	10845	IV	+18.11	
		1941	13505	IV	+24.53	
		1951	14568	IV	+ 7.87	
		1961	14575	IV	+ 0.03	
		1971	17402	IV	+19.49	
3.	Nimbahera	1901	5446	V	--	
		1911	4278	VI	-21.45	
		1921	5141	V	+20.17	
		1931	5946	V	+15.66	
		1941	6898	V	+16.01	
		1951	10585	IV	+53.45	16.46
		1961	11655	IV	+10.11	
		1971	16542	IV	+41.93	26.02

contd.....

contd.. Table 6.11

4. Choti Sadri	1901	5050	V	--	
	1911	4576	VI	- 9.39	
	1921	4757	VI	+ 3.96	
	1931	56.15	V	+18.04	
	1941	6045	V	+ 7.66	
	1951	6976	V	+15.40	
	1961	8265	V	+18.48	
	1971	9620	V	+16.39	55.32
5. Bari Sadri	1941	5705	V	--	
	1951	6851	V	+20.09	
	1961	7937	V	+15.85	
	1971	9138	V	+15.13	15.09
6. Kapasan	1931	5400	V	--	
	1941	6085	V	+12.69	12.90
	1951	6883	V	+13.11	
	1961	8371	V	+21.62	
	1971	10907	IV	+30.29	25.95
7. Begun	1951	5428	V	+12.36	
	1961	D I C L A S S I F I E D			
	1971	8348	V	—	

(4) BANSWARA

1. Banswara	1901	7038	V--	--
	1911	7665	V	+ 8.91
	1921	8588	V	+12.04

contd.....

contd.. Table 6.11

	1931	10444	IV	+21.61	
	1941	12772	IV	+22.29	56.78
	1951	15558	IB	+21.81	
	1961	19566	IV	+25.76	
	1971	27350	III	+39.78	86.09
2. Kushalgarh	1911	2594	VI	--	
	1921	2731	VI	+ 5.28	
	1931	3069	VI	+12.38	
	1941	3520	VI	+14.70	31.83
	1951	4127	VI	+17.24	
	1961	5264	V	+27.55	
	1971	5841	V	+10.96	42.01

(5) DUNGARPUR

1. Dungarpur	1901	6094	V	--	
	1911	6470	V	+ 6.17	
	1921	7327	V	+13.25	
	1931	8560	V	+16.83	
	1941	8670	V	+ 1.28	49.71
	1951	9814	V	+13.19	
	1961	12755	IV	+29.07	
	1971	19781	IV	+55.08	71.51

contd.....

contd.. Table 6.11

2. Sagwara	1911	4499	VI	—	
	1921	5539	V	+23.12	
	1931	5563	V	+ 0.43	
	1941	6200	V	+11.45	42.47
	1951	6673	V	+ 7.63	
	1961	8655	V	+29.70	
	1971	11484	IV	+32.68	56.55

The general survey of the population growth in all towns (table 6.11) reveals that during last 70 years the population of 10 towns decreased in 1911, they are Bhilwara (-15.50), Shahpura (-11.64), Udaipur (-27.73), Nathdwara (-36.86), Bhinder (-10.48), Salumber (-3.96), Chittorgarh (-3.44), Partapgarh (-15.17), Nimbahera (-21.45) and in Choti Sadri (-9.39). The towns which did not lose population had only a slow rate of growth in the same decade. Since 1921, there has been continuous ^{slow} growth of urban population. There were 13 towns in 1901 while their number in 1971 rose to 21 only. This vertical growth of towns without corresponding growth in their number signified only urban growth not urbanisation. Significantly, a large number of towns (14) were declassified in 1961 and in 1971 hardly 2 of them could regain urban status. Most of the small towns are large size villages only performing market functions which are discussed later.

Distribution of Urban Settlements :

All the urban centres of Mewar are well connected with transport modes except Kushalgarh and to some extent Partapgarh. Eleven towns out of 21 are situated along the railways of which two are junctions, Chittorgarh and Udaipur. The old routes connect them while modern means of transport follow the old routes laid out during the Mughal period. So the urban centres bear the testimony of the eventful political history of Mewar.

The technique of near-neighbour distance (nnd) has been used to interpret the distribution pattern of urban settlements

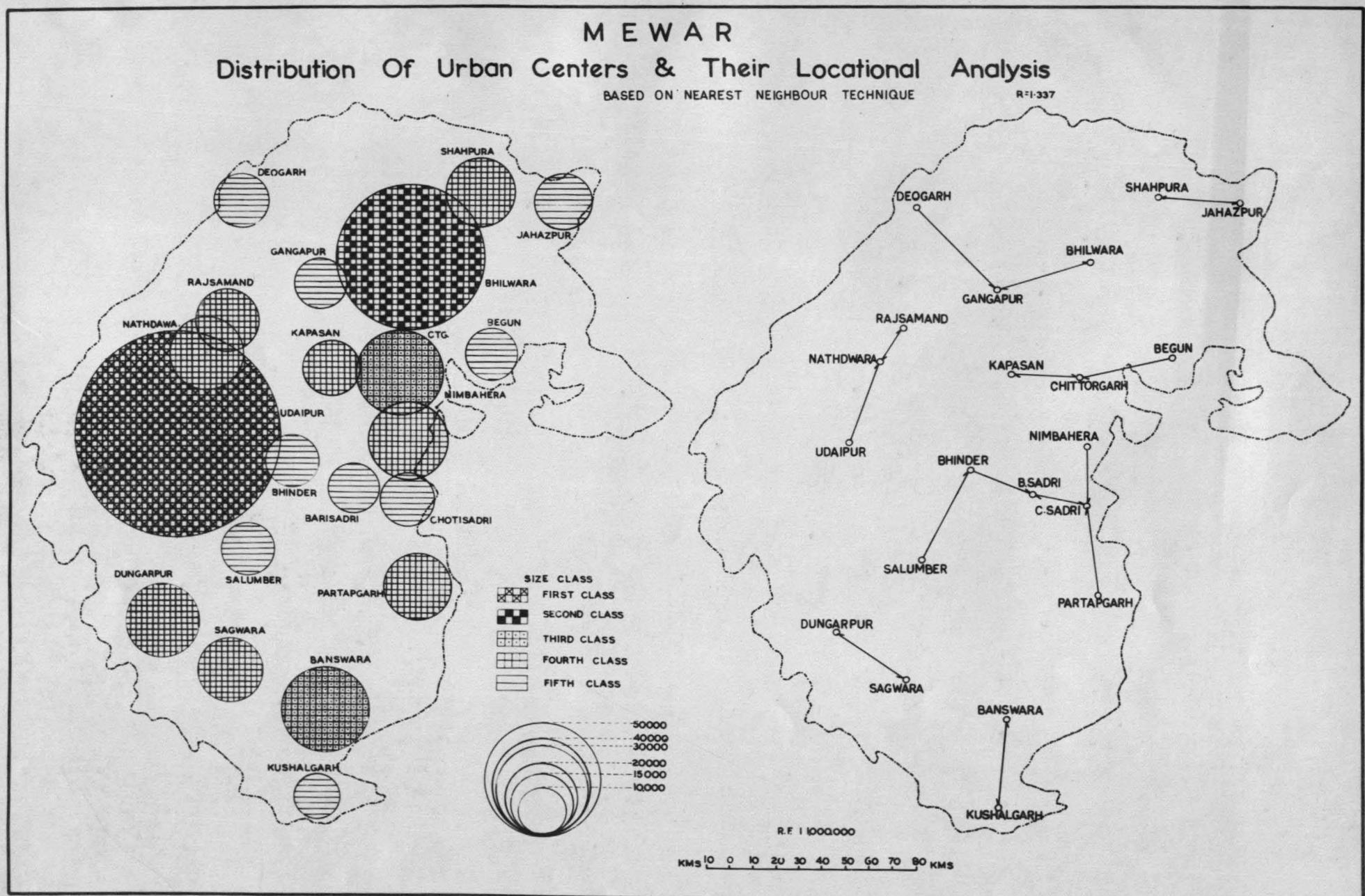


FIG. 67

in Mewar. The observed mean distance in Mewar region is 33.70 and the expected mean distance is 25.0. Thus, $R = \frac{33.70}{25.0}$ or 1.337. The "R" value indicates, that the distribution of urban centres has a tendency closer to regular than randomness irrespective of size (Fig. 6.7). The western part which is covered by Aravallis shows deficiency in urban centres, similarly the areas which are covered by forests and by uparmal highlands are without urban centres. The urban centres sprang up only in plain areas, accessible by roads and rails. Many of them are historic places.

Economic Base of Urban Settlements :

The rise and fall of the urban settlements depend very much on the nature and expansion and contraction of their economic base. They exist mainly to serve their own inhabitants as well as the people of their hinterland or service areas. Even the very nature of urban centres is determined by the main functions they perform. Each urban centre is differentiated from its neighbouring ones because of the relative importance of each function in them. The relative importance of a function in a town is determined by mainly the number of people engaged in that function with respect to employment in other functions out of the total employment. While contribution of each function to the total urban economy is not available, employment is the sole criterion for determining their urban economic base. The number of persons engaged in a function also indicates the extent the urban function specialised relatively speaking and also its importance in commanding

the extent of hinterland. While on the other hand, the nature and character of their hinterland create factor demand on the urban centre and condition the urban character. Certain functions are familiar to site and situation of the urban centres, while some are traditional; others being modernisation in the urban morphology. If an activity is concentrated in a town in a certain magnitude will dominate the town's economic life and becomes its major function and qualifies the town's character and differentiates it from the other. Several functional classification of cities and towns have been attempted in India and abroad. Most of them have been used for functional classification of towns at national level. It is worthwhile to extend their use even at regional level. Chauncy Harris pointed out that as the size of the cities increase they assume multifunctional character and vice-versa. Howard Nelson extended a statistical analysis, by calculating standard deviation from the mean employment for each activity group and grouped the cities of U.S. according to their degree of variation from the mean in each function.

Functional Classification of Towns in Mewar :

For the functional classification of Mewar towns we have followed the criteria of Nelson, based on the published data in various district census handbooks of 1971. The census authority divided the working population in 10 major groups. On the basis of their classification, it has been attempted to find out, the percentage of the labourforce engaged in each activity group in each town of Mewar. See table 6.12.

Table 6.12
Proportion of Labour Force in Selected Activity
1971

S.No.	Urban Centres	Culti- vators	Agri. Lab.	Live- stock	Min- ing	House- Holds	Manuf. Ind.	Const-Trade ruct- ion & Comm.	Trans- port	Others	
1.	Udaipur	2.97	2.08	0.32	0.83	3.28	15.99	3.54	20.27	10.11	40.63
2.	Deogarh	18.01	11.43	0.49	0.18	10.66	7.48	5.08	20.19	5.58	20.87
3.	Rajsamand	14.39	5.19	0.56	1.32	9.12	10.21	6.08	16.45	5.27	31.36
4.	Nathdwara	7.05	33.74	0.78	0.14	10.49	11.78	4.40	19.85	6.35	35.38
5.	Bhinder	32.51	5.52	0.25	0.03	12.06	7.47	3.10	19.72	2.13	17.16
6.	Salumber	14.06	2.15	0.35	0.13	10.02	9.84	1.84	27.41	4.98	29.16
7.	Shahpura	22.10	7.66	0.89	0.05	15.87	6.95	3.25	12.64	4.38	26.16
8.	Jahazpur	54.13	2.20	2.20	0.32	6.86	4.15	2.63	7.87	2.49	17.09
9.	Bhilwara	19.10	2.79	0.82	1.20	5.78	24.28	2.30	16.24	4.45	22.98
10.	Gangapur	26.80	4.02	0.39	0.18	10.24	8.62	5.07	16.73	5.61	22.31
11.	Chittorgarh	11.45	3.64	0.36	1.17	3.5	13.15	4.22	20.62	7.0	34.81
12.	Begun	25.01	4.82	1.15	0.11	11.47	14.78	4.62	16.54	2.59	18.85
13.	Kapasan	31.40	8.78	0.71	-	9.26	7.31	2.83	15.53	5.40	18.73

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10
21
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contd... Table 6.12

14.	Nimbahera	14.18	4.91	0.74	1.36	5.70	14.75	3.16	22.90	7.13	25.12
15.	Choti Sadri	21.68	13.57	0.81	0.07	11.19	10.90	3.01	17.26	3.83	17.63
16.	Bari Sadri	14.26	5.67	0.46	0.04	17.52	6.85	5.46	26.20	4.61	18.88
17.	Partapgarh	5.21	2.12	1.09	0.04	12.03	10.19	3.37	27.50	5.63	32.78
18.	Dungarpur	7.26	1.24	0.36	1.93	6.36	11.28	1.18	21.65	10.36	38.32
19.	Sagwara	17.77	3.63	0.63	0.59	7.70	8.20	6.30	21.70	1.98	31.44
20.	Banswara	6.05	1.26	1.13	0.04	7.82	9.40	6.24	10.99	5.87	41.16
21.	Kushalgarh	10.58	2.41	1.40	-	17.09	3.82	2.47	25.33	3.01	33.84

Mewar
Functional Classification Of Towns ¹⁹⁷¹
 BASED ON H.J. NELSONS CRITERIA

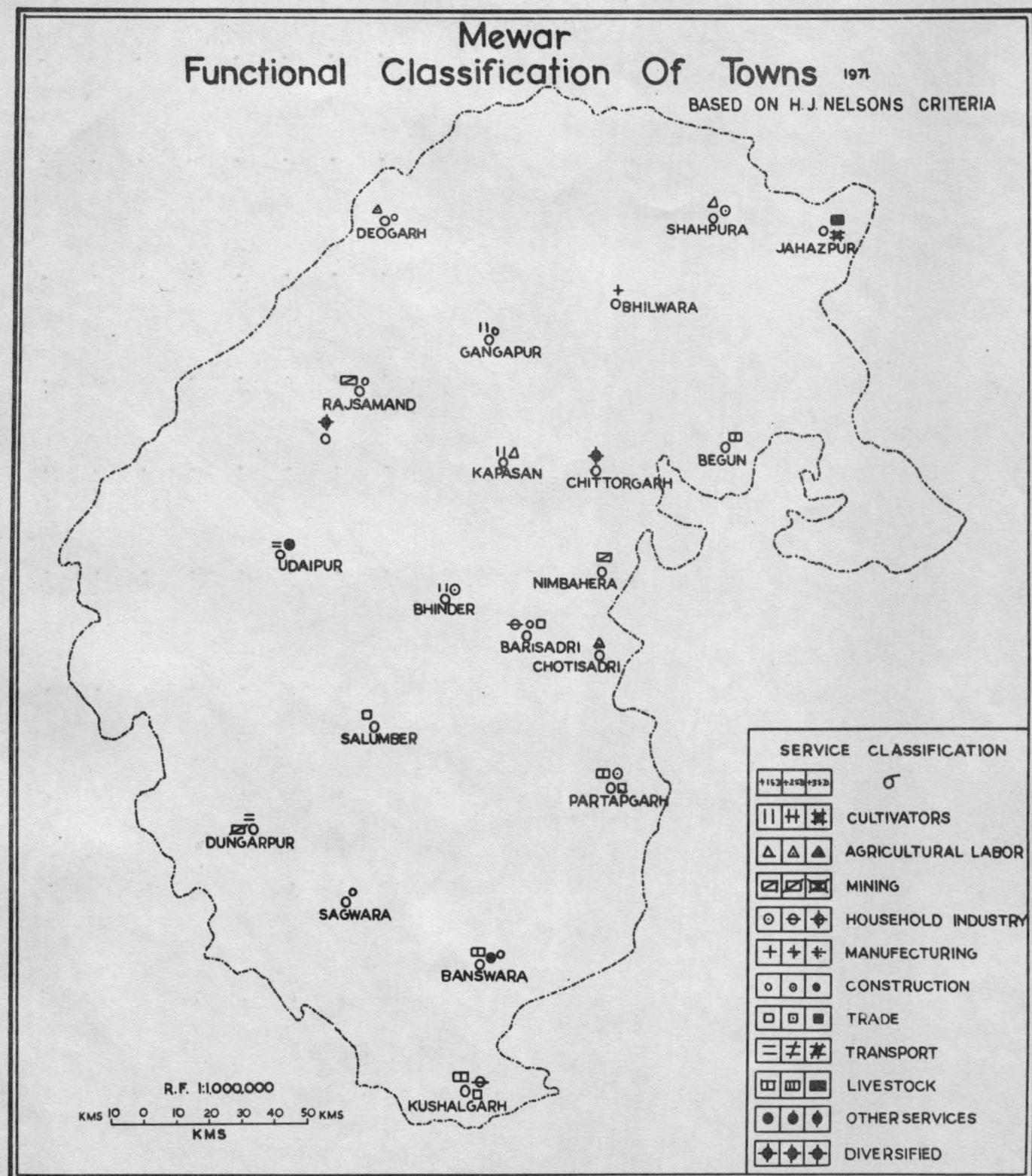


FIG. 6'8

As Nelson pointed out in his article that the individual percentages are meaningless without some points of reference we have calculated mean percentages and standard deviation from the mean worked out for each of the 10 categories (Table 6.13).

The degrees of variations from the regional average are recognised and the towns of Mewar grouped in their appropriate term. Towns which fall over plus 1 S.D. from the average in any category, say for example in manufacturing is recognised as Ff1 or only Mf town and over two S.D. as Mf2 and further over 3 S.D. or more S.D's recognised as Mf3 respectively following for each categories. The town which are more than 1 S.D. for any of the 10 categories of services are classified and presented on the map. 6.8. The classification of 21 urban centres of Mewar is as follows.

Analysis of Functions :

(1) Cultivators :

Although cultivation is not an urban function, four towns have shown large employment in it; at Bhinder (32.51), Jahazpur (54.13%), Gangapur (26.80%) and Kapasan (31.40%) all of them are small towns having population around 10,000 or less; as a matter of fact they are located in an agricultural rural hinterland performing service type of functions over the hinterlands. They resemble more of rural character than urban.

(2) Agricultural Labour :

This activity is dominantly concentrated in Deogarh (11.43%), Choti Sadri (13.57%), above plus 2 S.D. and at Shahpura.

Table 6.13
Average and Standard Deviation for Selected Activity Groups

S.No.	Occupations	Average	Standard Deviation	Average +1 S.D.	Average +2 S.D.	Average +3 S.D.
1.	Cultivators	12.72	12.60	25.32	37.92	50.52
2.	Ag. Labours	3.39	3.73	7.12	10.85	14.58
3.	Livestock	0.63	0.45	1.08	1.53	1.98
4.	Mining	0.74	0.58	1.32	1.90	2.48
5.	Household Ind.	6.76	4.84	11.60	16.44	21.28
6.	Manufacturing	14.59	6.14	20.73	26.87	33.01
7.	Construction	3.52	1.46	4.98	6.44	7.90
8.	Trade & Commerce	19.36	4.74	24.10	20.84	33.58
9.	Transport & Commu	5.76	2.71	9.47	12.18	14.89
10.	Other Services	31.52	8.97	40.49	49.46	58.43

Table 6.14
Service Classification

S.No.	Urban Centres	Functions
1.	Udaipur	Tn, Os
2.	Deogarh	Ag. I2, Con.
3.	Rajsamand	Mi, Con.
4.	Nathdwara	Diversified
5.	Bhinder	Cul, HH.
6.	Salumber	Td,
7.	Shahpura	Agh. HH
8.	Jahazpur	Cul 3, Ls3
9.	Bhilwara	Mf.
10.	Gungapur	Cul. Con.
11.	Chittorgarh	Diversified
12.	Gegun	Ls.
13.	Kapasan	Cul. Agl.
14.	Nimbahera	Mi
15.	Choti Sadri	AgI2
16.	Bari Sadri	HH2, Con, Td.
17.	Partapgarh	Ls, HH, Td.
18.	Dungarpur	Mi2, Tn.
19.	Sagwara	Con.
20.	Banswara	Ls, Con. Os,
21.	Kushalgarh	Ls, HH2, Td.

(7.66%). These towns also belong to the size class of the first group where they are also cultivators but work as hired labourers and go along with the agricultural group. Interestingly they occur mainly in the area where scheduled caste people dominate and most of the scheduled caste people are in fact engaged as agricultural labourers.

(3) Livestock:

This economic activity is primarily concentrated in five towns. They are Jahazpur (2.20%), Begun (1.15%), Partapgarh (1.09), Banswara (1.13) and at Kushalgarh (1.40). These are the towns which are either situated in unproductive upland areas or forested areas. They are also small towns.

(4) Mining :

Mining is not at all an economic function in Mewar, it employs only very few people; only three towns show some employment in mining; in no case it is more than 2%. Dungarpur (1.93%), Rajsamand (1.32%) and Nimbahera (1.36%) have more than mean percentage (0.74) employment in mining and quarrying.

(5) Household Industry :

In this function, only 5 towns have shown specialisation, 2 out of which have it as their prime function (Bari Sadri and Kushalgarh) and the rest also show significant figure. Nevertheless, this is an important function in the towns of Mewar.

(6) Manufacturing :

Out of 21 urban centers of Mewar only one town namely

Bhilwara (24.28%) has specialised in this function as a result of the establishment of industries, recently.

(7) Construction :

6 towns have specialised in this function, namely, Deogarh, Rajsamand, Gangapur, Bari Sadri, Sagwara, and Banswara. The association of this function with primary occupation signifies its low development and low employment has not connected it to the modern urban functions. As a matter of fact, construction industries are mainly the services rendered to the poorly developed agricultures, mining and livestock farming.

(8) Trade and Commerce :

There are only four towns which are partly associated with this function. These towns are Salumber, Bari Sadri, Partapgarh, and Kushalgarh, (27.41, 26.20, 27.50, 25.33 per cent respectively). Next to other services, this function has the largest share of employment with least variation from town to town. Every town has significant employment in these function although only four mentioned above have specialised in it. They are the market towns and small in size where main business is trading agricultural products.

(9) Transport, Storage and Communications :

There are only 2 towns partly specialised in this function, i.e. Udaipur and Dungarpur, both and district head quarters and fairly linked with the other important urban centres of the region.

(10) Other Services :

This is a dubious function and goes alongwith the size of the towns. High employment in this function (in Udaipur and Banswara) indicate the obsence of any other dominant function and tend to lump the functions to make the towns diversified.

Diversified :

In the whole region there are only two towns (Chittorgarh and Nathdwara) recognised as diversified towns where none of the functions are dominant.

Frequency Variations Among the Towns :

The frequency graph (Fig. 6.9) shows the distribution of economic activity among the urban centres of Mewar. These graphs show the frequency with which a given percentage (presented on abscissa) and labour force employed in the (21) towns (on ordinates) in an activity among the 10 activity groups. The respective figures indicate a unique type of distribution in the activity designated by cultivation and others services. Mining, livestock, and construction graphs indicate quite different from that of cultivators and other services graph. The five remaining functions might be considered together as a third type services, which are not concentrated nor dispersed. The cultivators which are engaged in their respective towns display a greater horizontal variation in terms of the labour force employment. As size of town increases, the employment in agricultural pursuits decreases, while employment in manufacturing and other

MEWAR

Distribution Of Economic Services Among The Towns

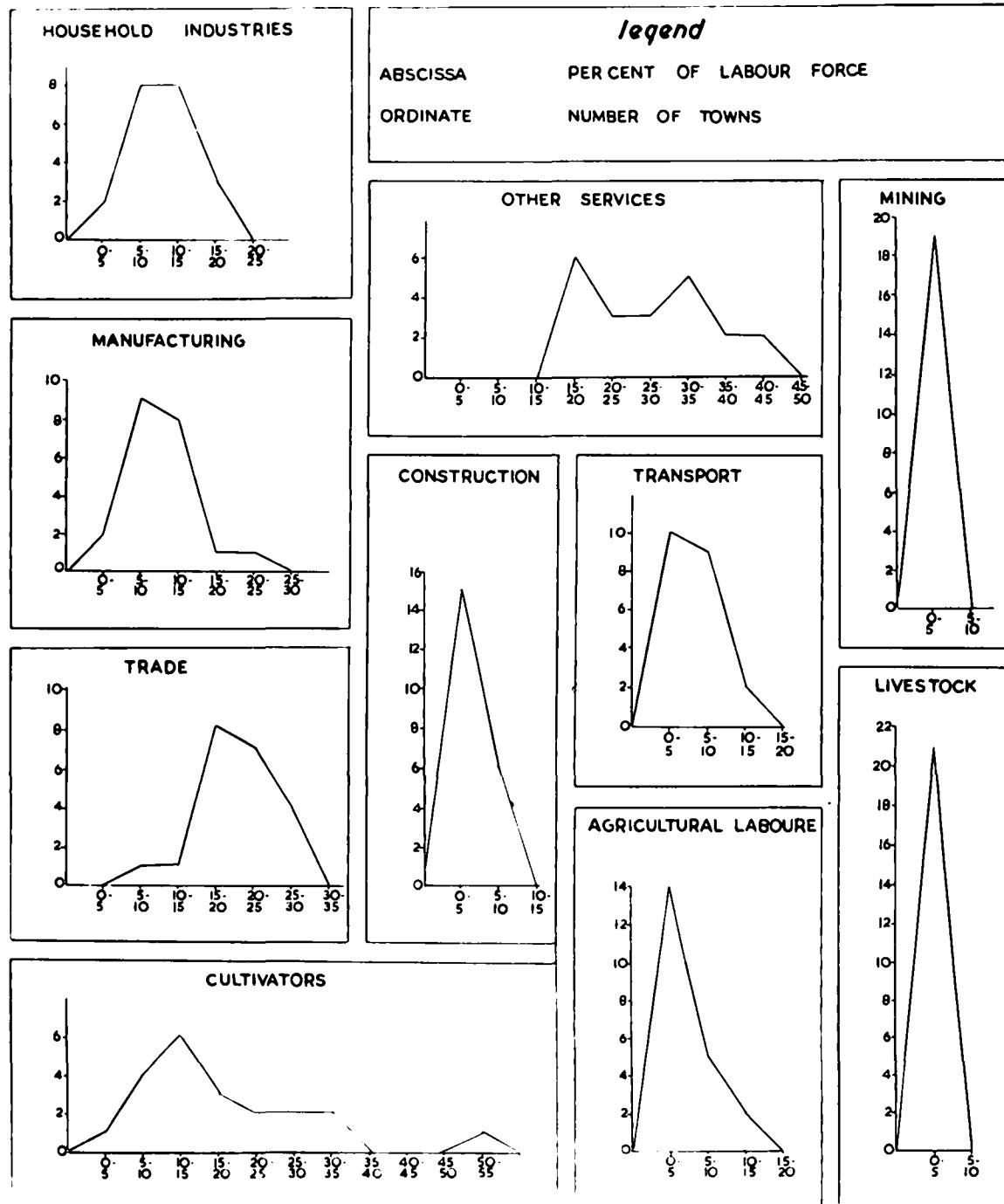


FIG. 6'9

Table 6.15
Functional Classification of
Towns

Functional Class	No. of Towns	Specific Functions with no. of Towns
Mono functional	6	(1) Trade & Commerce 1 (2) Manufacturing 1 (3) Livestock 1 (4) Mining 1 (5) Construction 1 (6) Agriculture Labour 1
Bifunctional	9	(1) Transport & Other Services 1 (2) Ag. Labour & Construction 1 (3) Mining & Construction 1 (4) Cultivators & Household Industry 1 (5) Ag. Labour & Household Industry 1 (6) Cultivators & Construction 1 (7) Cultivators & Ag. Labour 1 (8) Mining & Transport 1 (9) Cultivators & Livestock 1
Trifunctional	4	(1) Household Industry, Construction & Trade 1 (2) Livestock, Household Industry & Trade 2 (3) Livestock, Construction & Others Services 1
Diversified	2	Included all Categories

high order functions increases. In other words, the degree of industrial growth is a factor of size mainly.

The table 6.10 shows the functional association of the towns - while some towns have shown remarkable specialisation in single function in each, there are nine towns having bifunctional character and are generally identified with rural areas. Only a few towns show the emergence of modern occupational categories such as manufacturing and trade and commerce.

Levels of Urbanisation :

The level of urbanisation not only signifies the proportion of population residing in the urban places, but also its concentration, the types of activities people are mainly engaged in and also their mode of living, etc. urbanisation is a process of concentration of people to perform specialized functions typical to urban areas. The Mewar is very lowly urbanised, nevertheless urban people are concentrated in a few spots. Out of only 47 tehsils, only 21 have only one urban centre in each while the rest 26 tehsils are entirely rural.

To identify the level of urbanisation, four attributes, viz. percentage of urban to total population, urban density, percentage of employment in secondary and in tertiary sector are taken. The respective values of each attribute have been arranged in descending order and have been ranked to find out the rank correlation with the help of Spearman's rank correlation

method*. Besides, all the rank orders (except urban density) are added and divided by number of attributes to find out the composite rank index, which is a pure index for the level of urbanisation.

The table 6.16 reveals the results of correlation, it indicates that, the percentage of urban to total population is highly correlated with employment in secondary and tertiary as well as with rank index and vice-versa. The other attributes are not highly correlated with each other.

Table 6.16
Correlation Results

	I %age of Urban to Urban to Total Popu.	II Urban Density	III Emp. in Sec. Sec.	IV Emp. in Ter. Sec.	V Composite Rank Index
%age of Urban to Total Popu.	1.00				
Urban Density	-0.01	1.00			
Emp. in Sec. Sector	0.72	-0.07	1.00		
Emp. in Ter. Sector	0.63	0.68	0.67	1.00	
Composite Rank Index	0.88	0.29	0.44	0.54	1.00

$$* R = 1 - \frac{6 \sum d^2}{N^3 - n}$$

Where = R stands for correlation coefficient.

d^2 = sum of sq. roots of the difference in the rank values of each tehsil for two attributes whose correlation is to be determined.

n = Stand for number of observations.

Table 6.17
Levels of Urbanisation

S.No.	Urban Tehsils	%age of Urban to Total Rank	Urban Density Per Km ²	%age of Emp. in Sector	%age of Emp. Inter. Sector	Composite Rank Index
1.	Deogarh	16.06	362.42	23.22	46.64	10
2.	Rajsamand	15.84	1412.89	25.32	53.08	9.25
3.	Nathdwara	15.84	1076.52	26.67	61.58	6.25
4.	Vallabhnagar	7.53	462.69	22.63	39.01	18.5
5.	Girwa	51.72	2723.83	22.81	71.01	1
6.	Salumber	8.16	1655.12	21.70	61.55	12
7.	Banswara	17.77	1325.08	23.46	68.02	4
8.	Kushalgarh	4.34	2607.58	23.38	62.18	13.5
9.	Dungarpur	7.55	3368.48	18.82	70.33	10.5
10.	Sagwara	6.90	782.82	22.20	55.12	15.5
11.	Chittorgarh	26.41	1066.10	20.87	62.45	5
12.	Kapasan	9.90	382.16	19.40	39.66	17

contd.....

contd.. Table 6.17

13.	Nimbahera	19.52	1088.28	23.61	55.15	7
14.	Bari Sadri	14.91	479.93	29.83	49.69	10
15.	Begun	6.69	1268.69	30.87	37.98	18
16.	Choti Sadri	15.26	586.94	25.10	38.72	13.5
17.	Partapgarh	10.37	1359.53	25.59	65.91	7.5
18.	Shahpura	15.05	1810.38	26.07	43.18	12.5
19.	Bhilwara	47.96	689.79	32.36	43.67	7.5
20.	Sahara	12.96	595.11	23.93	44.65	14.5
21.	Jahazpur	9.20	205.58	13.65	27.46	18

The values of each attributes have been classified into low, medium and high category. The table 6.17 shows that the percentage of urban to total population is high in Chittorgarh (26.41), Bhilwara (47.96) and in Girwa (51.72) tehsils, medium percentages (range 10-20) are found in Partapgarh, Sahara, Bari Sadri, Choti Sadri, Shahpura, Rajsamand, Nathdwara, Deogarh, Banswara and in Nimbahera tehsils and low percentages (below 10) are observed in Vallabhnagar, Salumber, Kushalgarh, Dungarpur, Sagwara, Kapasan, Begun and in Jahazpur tehsils.

The distribution of employment in secondary sector indicates high percentage in Bhilwara (32.36), Begun (30.87), Bari Sadri (29.83), Nathdwara (26.67), Shahpura (26.07), Partapgarh (25.59), and in Rajsamand (25.32). The medium (range 22.63 - 25.32) is found in Choti Sadri, Sahara, Nimbahera, Banswara, Kushalgarh, Deogarh and in Girwa tehsils. Finally low percentages (below 22.63) are observed in Vallabhnagar, Sagwara, Salumber, Chittorgarh, Kapasan, Dungarpur and in Jahazpur.

The distribution of employment in tertiary sector shows high (above 61.58) percentage in Nathdwara, Kushalgarh, Chittorgarh, Partapgarh, Banswara, Dungarpur and in Girwa tehsils. The medium (range 43.67 - 61.58) percentage is found in Salumber, Nimbahera, Sagwara, Rajsamand, Bari Sadri, Deogarh and in Sahara tehsils. The remaining tehsils show (below 43-63 percentages) in these services.

The aggregate urban score, which is the composite rank index of three above mentioned attributes shows (Table 6.17) higher level of urbanisation in Girwa, Bhilwara, Chittorgarh, Banswara, Nathdwara, Nimbahera and Partapgarh. The medium level of urbanisation is found in Rajsamand, Bari Sadri, Deogarh, Shahpura, Choti Sadri, Dungarpur and in Salumber tehsils. The low level of urbanisation is found in Sahara, Kushalgarh, Begun Sagwara, Kapasan, Vallabhnagar, and in Jahazpur tehsils. Although the percentage urban and non-agricultural occupations are the two basic urban attributes their interaction shows that the level of urbanisation in the region is very low and within the region, again it is highly concentrated only in 21 tehsils only. Out of these urbanized tehsils levels of urban development has great spatial variation not only in size but also in urban attributes. Even then three/four tehsils are most urbanized and could reflect the national level, while others fall below the national level and also regional level.

Transportation :

The system of transport and means of communication serve as an index of economic development and prosperity of any area. In Mewar there are 50.9 kilometre metre gauge railway line and 6664 kilometres of all kinds of roads to serve the region. Since, among the several means of transportation, viz. Railway, Roads, Airways and Rivers, Railways are the most important* mode of

* Our main emphasis on railway due to little scope of study and lack of adequate information regarding roads.

transportation, due to its distinct characteristics than any other mode. Fixed terminals and transhipments are necessary at the end of rail journey. (a) Railways are best suited to the carriages of large consignments over long distance, especially heavy, bulky, commodities. (b) The cost of carriages for small consignments and short distance tend to be high. (c) Individual consignment on cross country journey may require several transhipment and so may take long to reach their destination. (d) Capital maintenance and operating cost are heavy.¹²

Thus, for the prosperity and feature development of Mewar, Railway may play a dominant role in comparison to other modes.

Process and Pattern of Railways :

The present pattern of Railways which emerged in Mewar (Fig.) is the result of a long process dating back to about 85 years. The railways of Mewar came under the western railway system of India under Ratlam and Ajmer division, which is a metregauge section. First of all the process of railways came into existence in Ratlam division on 10th March 1880, when a line opened between Neemach (Madhya Pradesh) to Nimbahera and in its continuation the line stretched toward north from Nimbahera to Chittorgarh on 19th March 1881¹³ and from Chittorgarh

12. Robinson, H.: "Economic Geography". 1972. pp.256.

13. History of Indian Railways - constructed and Progress Published by Government of India (Ministry of Railways) Railway Board, pp.254-19.

MEWAR

ACCESSIBILITY BY RAILWAYS

DISTANCE FROM ANY STATION

IN KMS

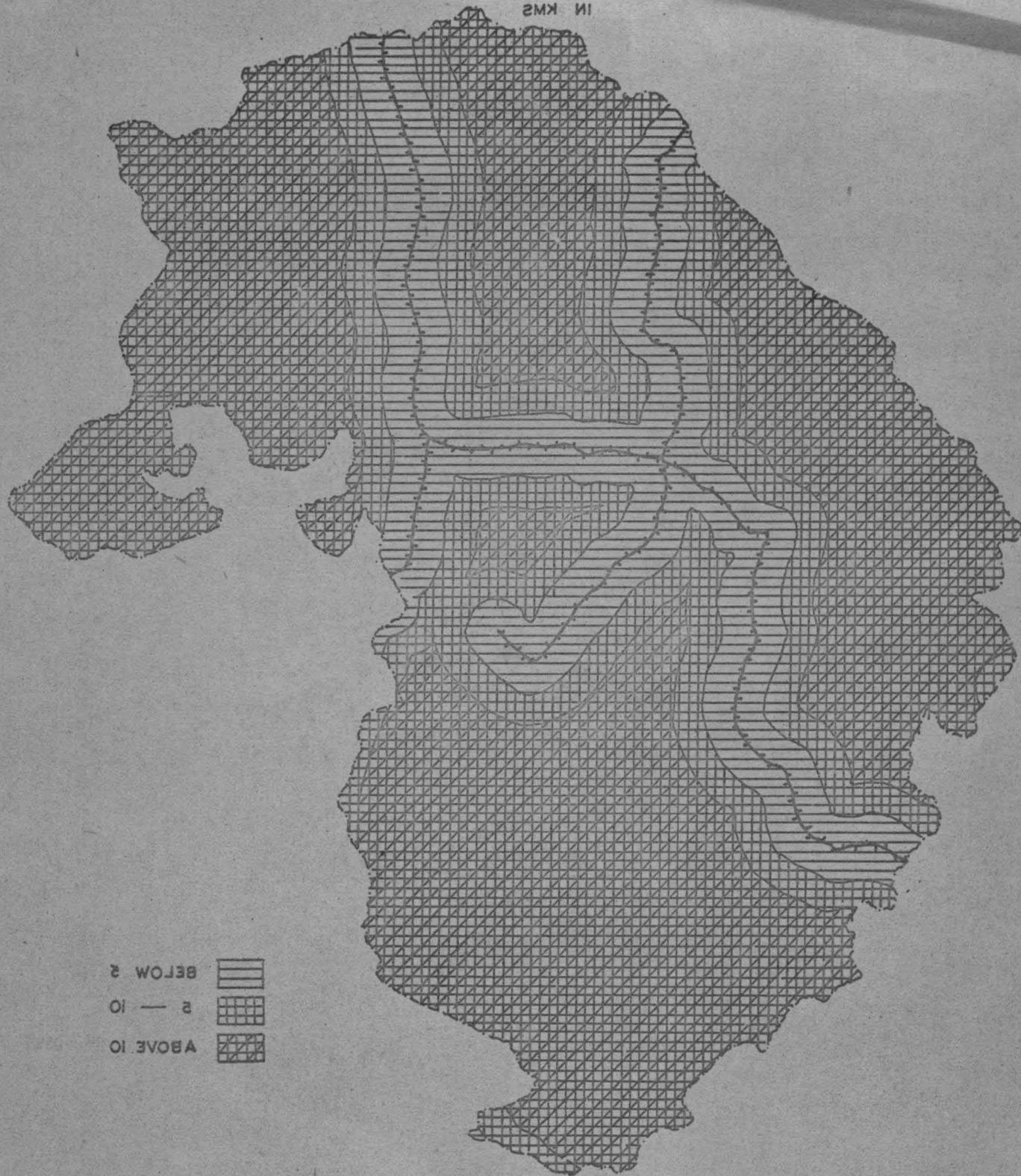


FIG.Q.10

to Nasarwadi on 1st December 1881. It was the first phase of construction of Rishiwala in Mevar.

Second phase started when Chittoragiri-Ushaiqur section Rishiwala came into existence in which Berach to Desuri and from Desuri to Ushaiqur line opened in 1867 and 1868. The line was maintained and worked by Bowpsa, Berach and Central India Railways company upto 3rd December 1881. With effect from 1st Jan-
uary 1882, the maintenance and work of the line were taken over by Distpr. The name Ushaiqur-Chittoragiri Rishiwala was changed into "Mevar State Rishiwala" on and from 1st August 1880.¹⁴ In the mean time a new Rishiwala line between Nasaji Junction of Mevar
junction was opened; at first, line was drawn between Nasaji to Kankotri on 1st November 1880, then from Kankotri to Chittorgarh to Kankotri on 1st November 1882 (SOCP 1st November 1882) and Chittorgarh road to Nasipaligat (16th November 1882) further from Nasipaligat to Mevar Junction on 4th February 1886.¹⁵ Considerment up on the formation of the unitary state of Rajasthan with effect from 1st May 1888, the control of Rishiwala with railway became Government from the date by the Distpr, and since then the line was under control of the United State of Rajasthan. The same Mevar
state Rishiwala was further changed to Rishiwala Nasaji on and from 1st December 1888. As a result the federal financial institution was formed by the United State of Rajasthan to the extent of Rs. 100,000, the line came to Nasaji in the Government of India.¹⁶ The Nasaji Junction of Distri-

14. SOCP. 1868. 15. SOCP. 1868. 16. SOCP. 1868.

PATTERN OF RAILWAY NETWORK

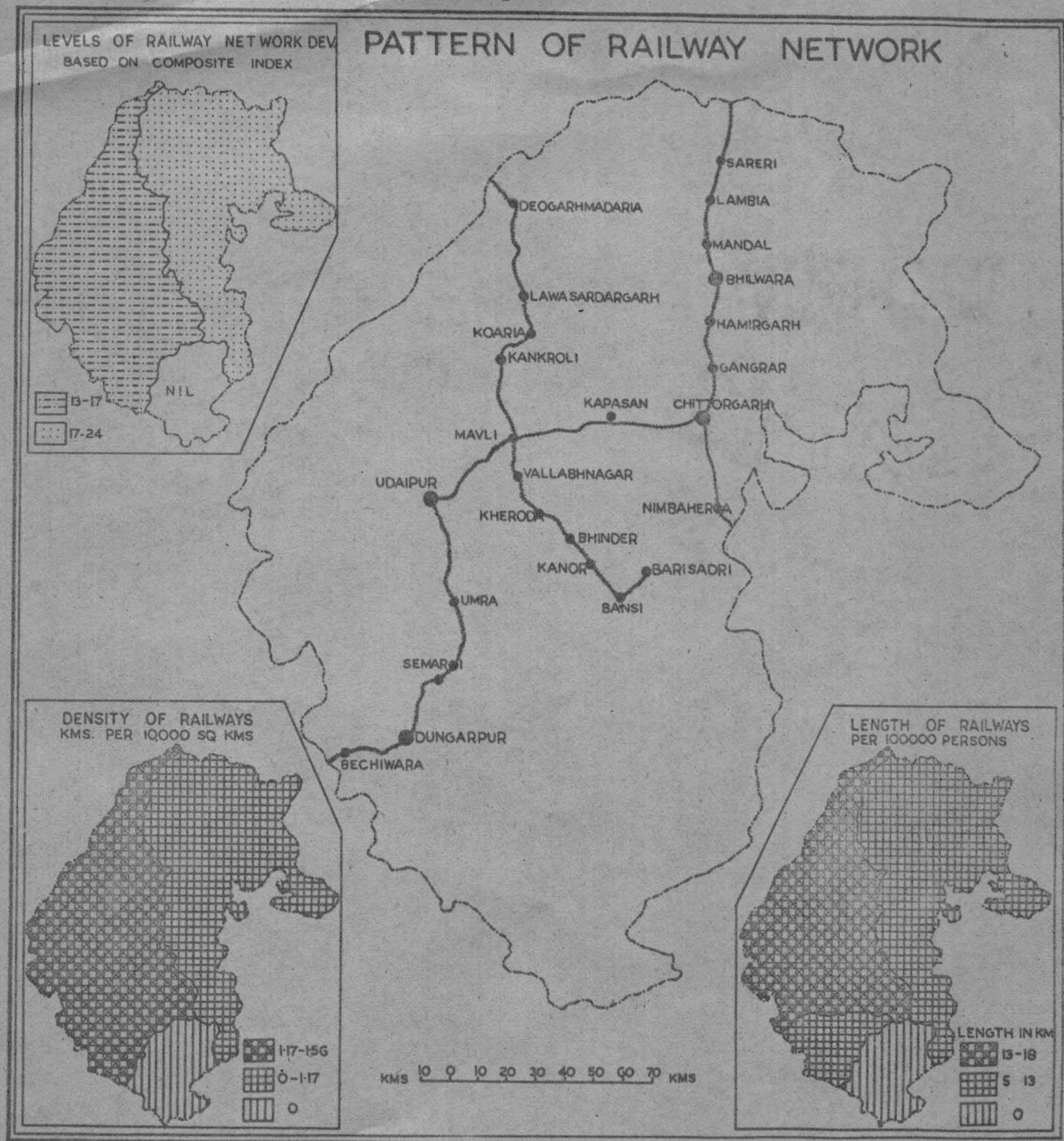


FIG. 6'II

Sadri section opened in three phases, viz. Mavali junction to Kheroda, line opened on 15th January 1948, then from Kheroda to Kanor on 18th August 1948, and from Kanor to Bari Sadri opened on 19th November 1949.¹⁷ The Udaipur-Dungarpur railway line is recently constructed after 1962 survey of railway. Thus in Mewar there is only Banswara district which have no railway line but programme has been made for a broadguage line in the district.

The above history of railway development in Mewar shows that the principal line was constructed in nineteenth century and during the colonial rule, the princely states were autonomous to develop their own line, but very little development took place. After independence, the merger of princely states of Mewar the railway has been brought under the all India railway development programme but still there is no well concerted programme for its development. Eastern-south and North and Western parts are still unserved by railway. The single meter-gauge track passes the region cutting across from north to south-west direction in a zigzag manner connection important towns of Mewar. Most of the large size villages are also found to occur along this line. This trunk line by-passes the Aravallis on the west and the forested areas of Banswara district in the Bagar region (Fig. 6.17) on the east.

17. ibid. pp. 256

The districtwise analysis of levels of railway net-work, its density per 10,000 sq.km. and length of railways per 1000000 persons shows only Udaipur district to be most developed, next is the Dungarpur district; least developed districts of course are Banswara and Bhilwara (Fig. 6.17).

CHAPTER VII
CONCLUSION AND FINDINGS

Regional Character :

The region of Mewar could be characterised by its historical and cultural identity; and maintained its isolation from the rest of the state by purely subsistence agricultural economy with maize as the principal crop and is supported by the difficult terrain with formidable physical constraints. The three physical units into which the region could be sub-divided have distinct physical conditions but the level of under-development and general backwardness bind them together. The Hilly tract of the west is part of Aravalli - rugged and bare, with scanty rainfall and is most backward; the Northern Mewar Plain with level land and repeated traditional cultivation under drought condition rendered a sizeable waste land with lot of potentiality for development; the Southern Mewar Plain mainly tråbally dominated is also very backward but this is the only area in Rajasthan which is rainiest and has tremendous potentiality for agricultural development. These characteristics of Mewar have been influenced greatly by the politico-historical processes since the period of Mughals and Ranas.

The history of Mewar has unfolded its political, economic and strategic situation in the past. Its medieval history has recorded its golden era when the region tried to maintain its identity but had to succomb to the politico-administrative force of the centre (Delhi) during Akbar's time and was admini-

stered in an organised manner. It was part of Ajmer Suba of which two sarkars, Chittor and Sirohi encompassed the Mewar. These Sarkars were sub-divided into Mahals and/or parganas in regular manner and their boundaries were drawn strategically and linked by roads for convenience of revenue collection and civil administration. The economy was primarily based on agriculture, productivity of which varied from plain to plateau and revenues were charged accordingly. Each Pargana had a headquarter as the seat of administration. They were connected by Major trunk and link routes. Their location thus was strategic in terms of such linkages. The economic level of any Pargana had thus been determined by its geographic location and availability of favourable physical conditions.

Geographically thus the region has been identified to be located east of Aravalli, the surface of which was underlain by hard crystalline rocks exposed in most cases by sub-aerial denudation and resulted in semi-desertic condition. Physiographically the region has been divided into three meso and eight micro regions. Thus as a whole western part covered by Aravallis, the eastern part of the region basically a plain divided into two parts by great Indian Water-Shed, extending upto Partapgarh hills within the region. The drainage pattern of Mewar determined by its physical features and the rainfall pattern. The course of streams of upper Banas plain is characterised by consequent type of drainage while the drainage of Bagar Plain performs the dendritic pattern. The east to west climatic zonation extending longitudinally from Northeast to

southwest paralling the grains of Aravalli has been determined mainly by the monsoonal rainfall and also the existence of subdued Aravalli which is not able to guide the Arabian Sea monsoonal airmass streams. Climatic conditions are more formidable for the success of agriculture where irrigation measure is meagre and inadequate. The soils of Mewar are mainly residual type except in the forested parts and have lossed most of their fertility because of repeated use and being bare, exposed to weathering. Nevertheless their productivity could be increased by proper irrigation and drainage and other treatment.

The soil of northern Mewar plain is brown with saline phase. The hilly soil is dominant in Udaipur district. The vegetation is characterised by dry teak forests and tropical dry deciduous forests, found throughout the region. It has been depleted in the northern plain and in the Aravallis while still abounds in the southern plain where mainly tribal people reside.

Demographically two district sub-regions emerge; while the process of detribalisation in the northern plain has given rise to the concentration of scheduled caste people, in the south still tribal people dominant.

So far as growth of population is concerned, the region shows a slow but continuous growth since 1901. The population growth has always been slower than the national rate may be owing to high death rate among them. The various kind of densities like Arithmetic, Rural, Urban, Agricultural and carrying capacity of land have shown that inspite of low density and

smaller number the pressure on the limited available land is quite high and precariously supporting them. The southern plain is characterised by high density whereas northern plain by low to medium density but reverse is the picture when compared with agricultural density. The hilly and dissected topography occupied by the headwater portion of non-perennial streams with low but seasonal rainfall could afford only subsistence economy. The economy is heavily based on agriculture in rural areas and economy in urban areas is mainly on the tertiary sector. The largest city, Udaipur has as high as 71% of the total workers in tertiary sector. Except in Bhilwara town, manufacturing industry is scarce. High dependency ratio, large sex ratio and big household sizes are typical characteristics of this backward area where the urban-rural difference is in size only. Most of the villages are small in size and scattered in the dissected terrain. These socio-economic indicators further reveal the great spatial variation within the region and bring out socially differentiated sub-regional pattern. The concentration of scheduled caste and scheduled tribes population in the region are spatially separated while the first has characterised the north, the other dominates in the south. In other words, the northern portion in upper Banas plain detribalisation has been much more than in the south as has been observed by little immigration to any of these areas. The detribalised class identified as scheduled caste or even backward class have resorted to agriculture as labourers in most cases. Thus agriculture being the principal economic activity has become highly

labour intensive. Most of the people are dependent on agrarian economy only although regional land-use pattern indicates that about 50 to 60 per cent of the land is not useful as well as not used for cultivation and its usability is determined by the availability of irrigable water only. The irrigation system is least developed although there is some scope for it. There are three main sources of irrigation that is well, tank and canals, out of which well irrigation is a primary source throughout the region and in fact about 80 to 90 per cent of the irrigated area is being covered by wells. The intensity of irrigation and intensity of irrigated cultivations is high in northern part whereas low in southern part, where rainfall intensity is quite high. The intensity of corpping is more dependent on intensity of irrigation rather than on rainfall intensity alone. These together determine the success of crop and also decide the dominant crop. In case of ranking of crops, maize is the only dominant crop throughout the region followed by wheat, barley, and gram. The crop combination analysis shows five crops in various combination. Intensity of irrigation, labour and cropping pattern have characterised the level of agricultural development and shows that the northern portion is more developed than the south. Although, the south shows higher labour intensity, the intensity of cropping and intensity of irrigation have raised the agricultural level of the north and in the south wet cultivation could have developed the agriculture, but the tribal population use primitive method, resulting in low productivity.

Industrially, the region is very backward. Except traditional cottage industries, the industrial structure has shown no sign of development. The mineral resources are still untapped. Cotton textile has formed the base of the industry, and that too limited to pressing and ginning. Bhilwara town alone has some industry and recently has attracted some investment. The line is still traditional. The scope of agro-based industries particularly that of cotton and cotton-mixed synthetic fibre and chemical dyes have wide scope. However traditional cottage industries have wide distribution particularly in small towns but because of lack of developmental incentives they are still in declining stage. Most of these towns are not growing at all and in fact they resemble outmigrating character. In the region as a whole small size villages are numerically high (69.06%) with one third (30.98%) of the total rural population. The spatial distribution pattern of the settlements show a random pattern in the plains whereas in the hilly and slopy areas they are clustered in certain favoured spots with respect to their intrinsic location. Forest areas show similar characteristics as that of hilly areas. Randomness in the distribution of settlements has been influenced by factors such as nearness to urban centres or riverine tracts, etc. The distribution of large-size villages are in a longitudinal shape particularly along the radiating transport arteries emanating from the urban roads. The productivity of land and socio-cultural elements also influence the settlement pattern.

The size and spacing analysis shows that in the northern

part of the region, average size of villages is high where as it is low in the tribal south. The mean size of villages is largely determined by the topographical factors, social structure of the people, and by accessibility and the productivity of land. Hilly and dissected forested tracts have generally small size villages which are also dominated by the tribal population. The regression analysis reveals that small size settlements have a tendency to be more closely spaced while as the size of the settlement increases the settlements tend to be spaced apart.

The region has only 21 urban centres having very low urban development. There is only one lakh city, one class II town, two class III, eight class IV and nine class V towns only. The region has not only a smaller number of urban centres, their contribution to urbanisation is also low. Two large towns inclusive of the only city are larger than their expected size while the smaller towns are smaller than their expected size. This gap in urban growth is significant for a backward region like Mewar. The growth pattern of population of the towns indicates that the towns are increased only by their natural re-production, not by the expansion of their economic base. The distribution of the urban centres tested by the near-neighbour analysis technique and shows some regularity in spacing irrespective of their size. Thus, each is functioning the same role over respective hinterland i.e. market centres. Udaipur only has a tendency to be regional capital and the control centre of the regional economy. Bhinder, Jahazpur, Gangapur, Kapasan,

Deogarh, Choti Sadri and Shahpura are primarily market towns. So is the case of Begun, Partapgarh, Banswara and Kushalgarh whose main activity is livestock exchange. Mining and quarrying has characterised Rajsamand, Dungarpur and Nimbahera. Only Bhilwara has specialised in manufacturing activities while household industry is concentrated at Bari Sadri and Kushalgarh. The level of urbanisation is very low in the region where only 21 tehsils are having a town in each while the rest 26 tehsils are entirely rural. The region is poorly served by road as well as rail transport. The railways are only meter-gauge. The level of transport linkage development is very low. Although each town is connected with roads, most of the region is inaccessible.

Regional Problems and Prospects :

The regional structure described above bring out a dismal regional picture of Mewar. The common bondage of under-development has been both the cause and effect of such character. The nature of relationship among thirty regional elements (given in Appendix III) further substantiates our findings. These regional elements have been used as indicators of development. Although no attempt has been made to regionalise separately with a single index of levels of development, we have tried to pick up some of the most sensitive indicators of backwardness which require an investigation at greater depth. These indicators not only pose problems of development, they themselves act as constraints. These indicators are sex ratio, illiteracy, size of households, S.T./S.C. and dependency ratio,

socio-demographic variables, while landuse potentiality, intensity of labour, and irrigation and cropping, transport and communication are the economic variables. Of course no sensitivity test has been made here. But one thing is clear that the future of the region lies on the removal of these socio-economic constraints particularly those which are directly affecting the development of agricultural economy. The principal bottleneck of agricultural development is the availability of irrigable water and other input supply. It would be worthwhile to take up a few sample areas of Northern and Southern Mewar for a depth study and compare and contrast interms of detail requirements for emerging local rural economy. As a corollary, a system of settlement hierarchy has to be evolved or planned so as to integrate locate economy to the regional one. Growth strategies recently talked about such as growth centre, comprehensive area development and integrated area approach and some others are worth investigating for the development of Mewar. Besides Mewar may provide a case for backward area development where minimum basic needs are also lacking, and it may be worthwhile to investigate the urgent need for the region to alleviate the local economy beyond subsistence level and create a social base where-in a self-sustained growth could be recommended.

Therefore, the diverse socio-economic development problems of this hilly tribally dominated, complexity of which has increased by their lang traditional attachment to the nature, need simultaneously preventive, curative and after care integrated approach for the eradication of its socio-economic ills.

Appendix I
 Administrative Divisions of Mewar During Akbar Period
 (1556 - 1605)

Suba	Sarkars	Mahals	Area in Bigha & Biswas	Revenue in Dams	Cavatry	Infantry	Castes	Sayur- ghal
Ajmer	Chittor	Islampur known as Rampur	101526	7000000	-	-	Sisodia	-
		Udaipur	-	1120000 (in money)	-	-	-do-	-
		Uparmal	27805	280000	-	-	-do-	-
		Artod	44720	200000	-	-	-do-	-
		Islampur known as Mohan	-	120600	-	-	-do-	-
		Badnor	113265	4311551	-	-	-do-	10015
		Phulia	257481	2843470	-	-	-do-	43470
		Banera	28038	3296200	-	-	-do-	244000
		Pur	19929	2601041	-	-	-do-	13452
		Bhinsror	-	1200000	-	-	-do-	-
contd.....								

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contd..Appendix I.

		Barsi Hazipur	35098	1375000	-	-	-do-	-
		Chottor has sub-division and Two Mahals	451118	800000	-	-	-do-	-
		Jeran	29218	1985250	-	-	-do-	-
		Sanwarghati	-	470294	-	-	-do-	-
		Sandri	5991	400020	-	-	-do-	-
		Simbal	-	100000	-	-	-do-	-
		Kosianah	52713	263812	-	-d	-do-	-
		Mandalgarh	-	3384750 (in Money)	-	-	-do-	-
		Mandal has a brick Fort	18848	447090	-	-	-	-
		Madaria	-	719202	-	-	-	-
		Nemache 3 Mahals	21416	719202	-	-	-	-
(2)	Sirohi	Sirhhi Abugarh	-	12000000	3000	15,000	Rajput	-
		Banswara	-	8000000	1500	20,000	-do-	-
		Jalor Sanchor	-	14000000	2000	5,000	Afgan Rajput	-
		Dungarpur	-	8000000	1000	2,000	Guhilot	-

Note : Information based on Ain-i-Akbari, Trans. by H.S. Jarret, Revised by J.N. Sarkar, Vol II Calcutta. 1949. Mahals have been identified in the accompanying map. They have been

contd.....

connected by routes which were used successively by the Delhi rulers to invade the region. Some outstanding identification of the important and doubtful Mahals is as follows:

Islampur known as Rampur :

Syamal Das identified if that it was a zile of Huker to the south of Bhinsrorgarh, and Abul Fazal also referred that it is also called Islampur near Chittor. (Abul-Fazal, Ain. Tr. by H. Blockmann, Vol. II, pp.458).

Uparmal :

Hilly plain M.N.H. part comprising Bijolia and Mandalgargh district known as Uparmal, having fertile soil and contained 24 villages. (Sharma, G.N. 1923, pp.3 and Nensi, Pt. and pp.10).

Islampur known as Mohan :

It was the village of Panwar and situated on the northern bank of Banas. This pargana was given by Aurangzeb to Raisingh situated 17 kos north of Udaipur at present it is known as Mohi (Nensi part and pp. 47, and 37).

Banera :

Banera has formed part of Mewar from very ancient time. Akbar took it about 1567 and it had described in Ain as one of the 26 Mahals of Chittor, sarkar.

Pur :

Pur is one of the oldest town in Mewar, and according to tradition dates from a period anterior to Vikramaditya.

The porwal Mahazan are said to take their name from the place.
 (Abul Fazal. Ain. Tr. H.S. Jarset Vol II. pp.273).

Bhinssorgarh :

Situated on the summit of a lafty rock in the angle of confluence where the Bhamini river falls into Chambal (Hunter, W.W. Emperial Gazetteer of India Vol III pp. 160).

Barsi Hazipur :

It is village known as Bassi identified by Syamaldas (Vir Vinod, Vol I pp.107) and by Abul Fazal (Ain. Vol II. pp.273).

Jeran :

Situated south of Neemach and Given to Amar Singh by Jahangir under treaty held in Gogunda (Nensi. Part I pp.27).

Sadri :

The bari Sadri was under Jagir and Choti Sadri was under Khalso, so Bari Sadri was the Mahal of the Chittor Sarkar.

Sirohi Sarkar :

Banswara :

Toward Malwaside the Banswara and that had a separate chief, having force of 5000 hourse and 10,000 foot. The ruler were from Sirodia clan. (Abul Fazal, Ain, Tr. H. Blochman Vol II pp.464 Calcutta 1907).

Dungarpur :

Lies on the route from Nemach to Disa. The town is over looked by a hill about 700 feet high (Emperial Gazetteer of India Vol IV. pp.325).

APPENDIX II

Table 5.4
 Industrial Structure in Mewar
 (1973)

Districts	No. of Registered Factories	Investment	Production	Employment	Comp. Index
Bhilwara	286	11911	25985	1141	8
Udaipur	476	28744	38684	3571	4
Chittorgarh	115	2454	4341	400	15
Dungarpur	22	712	545	92	20
Banswara	191	3810	2796	416	13
Regional	1090	47631	72351	5620	-

APPENDIX III

RANK-CORELATION MATRIX OF MEWAR 1971
(47 tehsils)

	General Density	Rural Density	Sex Ratio	Literacy	Sex of Households
				1	2
1	General Density	1			
2	Rural Density	0.90	1		
3	Sex Ratio	0.45	0.60	1	
4	Literacy	0.44	0.19	0.04	1
5	Size of Households	0.09	0.14	0.28	-0.22
6	Scheduled Caste	-0.23	-0.24	-0.58	0.15
7	Scheduled Tribes	0.08	0.12	0.45	-0.11
8	Dependency Ratio	0.43	0.37	0.60	0.07
9	Ag. Density	-0.08	-0.13	-0.12	-0.06
10	Carrying Capacity	0.24	0.12	0.25	0.16
11	Workers	0.26	0.13	0.02	0.25
12	Non-Workers	0.36	0.28	0.35	0.21
13	Land Use-Potentiality	0.20	0.23	-0.31	0.12
14	Intensity of Irr.	-0.18	-0.18	-0.44	0.76
15	Labour Intensity	0.27	0.14	0.09	0.57
16	Cropping Intensity	0.17	0.19	0.07	0.023
17	Forests	0.03	-0.01	0.35	-0.30
18	Cultivated Land	0.30	0.37	0.01	0.28
19	Fallow Land	0.15	0.20	-0.16	-0.015
20	Culturable Waste	-0.02	0.03	-0.39	0.20
21	Not Avail. for Cul.	-0.21	-0.25	0.36	-0.16
22	As Cultivators	0.07	0.08	0.06	-0.10
23	As Agr. Labour	0.36	0.26	0.16	0.16
24	Live Stock	-0.29	-0.38	-0.56	0.08
25	Mining	0.17	-0.01	-0.19	-0.17
26	Household Ind.	0.38	0.23	-0.09	0.13
27	Manufacturing	0.34	0.09	-0.15	0.73
28	Construction	0.21	0.01	-0.16	0.66
29	Transport	0.40	0.15	0.08	0.25
30	Trade & Commerce	0.23	0.10	-0.24	0.47

contd.. Appendix III.

	Schedul-ed Caste	Schedu-led Tribes	Depen-dency Ratio	Ag. Density	Carrying Capacity
	6	7	8	9	10
6 Scheduled Caste	1				
7 Scheduled Tribes	-0.89	1			
8 Dependency Ratio	-0.75	0.71	1		
9 Ag. Density	0.13	-0.17	-0.26	1	
10 Carrying Capacity	-0.17	-0.21	0.27	0.79	1
11 Workers	-0.19	0.23	0.12	0.12	0.23
12 Non-Workers	-0.56	0.56	0.28	-0.08	0.31
13 Land Use-Potentiality	0.53	-0.40	-0.37	-0.27	-0.46
14 Intensity of Irr.	0.74	-0.75	-0.72	-0.23	-0.06
15 Labour Intensity	-0.10	-0.05	0.09	-0.07	-0.96
16 Cropping Intensity	0.25	-0.37	-0.19	0.35	0.33
17 Forests	-0.37	0.45	0.42	-0.07	0.12
18 Cultivated Land	0.07	0.12	0.11	-0.75	-0.66
19 Fallow Land	0.02	-0.03	0.22	-0.28	-0.12
20 Culturable Waste	0.75	-0.70	-0.67	0.39	0.06
21 Not.Avail. for Cul.	-0.56	0.48	0.39	0.31	0.49
22 As Cultivators	-0.27	0.38	0.15	0.14	0.14
23 As Agr. Labour	-0.18	0.18	0.17	-0.05	0.17
24 Live Stock	0.68	-0.70	-0.77	0.49	0.16
25 Mining	0.22	-0.04	-1.79	0.40	0.56
26 Household Ind.	-0.59	-0.14	-0.07	0.04	0.12
27 Manufacturing	0.21	-0.018	-0.15	0.07	0.20
28 Construction	0.01	-0.20	-0.08	0.07	0.22
29 Transport	-0.17	0.13	0.30	0.01	0.10
30 Trade & Commerce	0.21	-0.38	-0.07	0.32	-0.04

contd.....

contd.. Appendix III.

	Workers	Non- Workers	Land Use- Potenti- ality	Inten- sity of Irr.	Labour Intensity
	11	12	13	14	15
11 Workers	1				
12 Non-Workers	0.62	1			
13 Land Use-Potentiality	0.02	-0.18	1		
14 Intensity of Irr.	-0.35	-0.52	0.17	1	
15 Labour Intensity	0.17	0.17	0.10	0.06	
16 Cropping Intensity	0.10	-0.03	-0.26	0.47	0.02
17 Forests	0.17	0.34	-0.57	-0.21	0.18
18 Cultivated Land	-0.07	0.01	0.64	-0.17	0.30
19 Fallow Land	-0.10	0.17	0.41	-0.17	0.04
20 Culturable Waste	0.02	-0.37	0.52	0.62	0.06
21 Not Avail. for Cul.	0.09	0.27	-0.82	-0.26	-0.01
22 As Cultivators	0.99	0.80	-0.05	-0.30	-0.13
23 As Agr. Labour	0.63	0.58	x0.05	-0.05	0.08
24 Live Stock	0.12	-0.29	0.23	0.49	-0.06
25 Mining	0.53	0.19	0.00	0.28	0.16
26 Household Ind.	0.61	0.44	-0.38	0.13	0.29
27 Manufacturing	0.53	0.48	0.14	0.15	0.29
28 Construction	0.40	0.28	0.05	0.20	0.33
29 Transport	0.64	0.66	-0.06	-0.07	0.32
30 Trade & Commerce	0.32	0.08	0.05	0.28	0.25

contd.....

contd.. Appendix III.

	Cropping Intensity	Forests	Cultivated Land	Fallow Land	Culturable Waste
	16	17	18	19	20
16 Cropping Intensity	1				
17 Forests	0.08	1			
18 Cultivated Land	-0.35	-0.17	1		
19 Fallow Land	-0.13	-0.12	0.24	1	
20 Culturable Waste	0.31	-0.53	-0.07	-0.08	1
21 Not Avail. for Cul.	0.18	0.39	-0.65	-0.42	-0.40
22 As Cultivators	0.02	0.21	-0.07	-0.02	-0.04
23 As Agr. Labour	0.04	0.08	0.15	0.01	-0.01
24 Live Stock	0.29	-0.35	-0.28	0.04	0.51
25 Mining	0.36	0.10	-0.22	-0.11	0.36
26 Household Ind	0.10	-0.32	0.20	0.13	0.37
27 Manufacturing	0.13	-0.06	0.04	-0.03	0.27
28 Construction	0.24	-0.13	-0.11	-0.04	0.33
29 Transport	0.16	-0.07	0.02	-0.04	0.07
30 Trade & Commerce	0.25	-0.03	-0.27	-0.01	0.23

contd.....

contd.. Appendix III.

	Not Avail. for Cul.	As Culti- vators	As Agr. Labour	Live Stock	Mining
	21	22	23	24	25
21 Not Avail. for Cul	1				
22 As Cultivators	0.17	1			
23 As Agr. Labour	0.04	0.51	1		
24 Live Stock	-0.28	0.06	-0.10	1	
25 Mining	0.09	0.43	0.16	0.40	1
26 Household Ind	-0.26	0.49	0.41	9.27	0.34
27 Manufacturing	-0.15	0.31	0.42	0.25	0.47
28 Construction	-0.02	0.24	0.36	0.24	0.44
29 Transport	0.11	0.51	0.52	0.48	0.49
30 Trade & Commerce	0.02	0.16	0.22	0.28	0.44

contd

contd..Appendex III.

	House- Hold Ind. 26	Manufac- turing 27	Constru- ction 28	Trans- port 29	Trade and Commerce 30
26 Household Ind.	1				
27 Manufacturing	0.63	1			
28 Construction	0.59	0.72	1		
29 Transport	0.65	0.81	0.73	1	
30 Trade & Commerce	0.37	0.58	0.53	0.52	1

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